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31st Congress, 1st Session.
[SENATE.]
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REPORTS
OF
THE SECRETARY OF WAR,
WITH
RECONNAISSANCES OF ROUTES FROM SAN ANTONIO TO EL PASO,

BY

BREVET LT. COL. J. E. JOHNSTON;
LIEUTENANT W. F. SMITH;
LIEUTENANT F. T. BRYAN;
LIEUTENANT N. H. MICHLER; AND
CAPTAIN S. G. FRENCH, OF Q'RMASTER'S DEP'T.

ALSO,

THE REPORT OF CAPT. R. B. MARCY'S ROUTE FROM FORT SMITH TO SANTA FE; AND THE REPORT OF LIEUT. J. H. SIMPSON OF AN EXPEDITION INTO THE NAVAJO COUNTRY;

AND

THE REPORT OF LIEUTENANT W. H. C. WHITING'S RECONNAISSANCES OF THE WESTERN FRONTIER OF TEXAS.

JULY 24, 1850.
Ordered to be printed, and that 3,000 additional copies be printed, 300 of which are for the Topographical Bureau.

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1850.

REPORTS OF RECONNAISSANCES, &c.

War Department,
Washington, July 23, 1850.

Sir: In answer to a resolution of the Senate of the 8th ultimo, calling for "copies of the journals of all reconnaissances returned to the Topographical Bureau by officers of the United States making such surveys within the last year, and not heretofore communicated, together with copies of the maps and sketches belonging to said reconnaissances," &c., &c., I have the honor to submit herewith a communication from the chief of the Togographical Bureau, transmitting the following reports:

1. Report of a reconnaissance of a route for a road from San Antonio to El Paso, by Lieutenant W. F. Smith, Corps Topographical Engineers, dated May 25, 1849.
2. Report of a reconnaissance of the country between Corpus Christi and the military post on the Leona, with a reference to the practicability of opening a road connecting these two places, by Lieutenant N. Michler, Corps Topographical Engineers, dated July 31, 1849.
3. Report of a reconnaissance of the Sacramento mountains, to ascertain if there existed a pass through them practicable for wagons, by Lieutenant W. F. Smith, Corps of Topographical Engineers, dated October 3, 1849.
4. Report of a reconnaissance of a route from San Antonio, *via* Fredericksburg, to El Paso, to obtain information in reference to a permanent military road from the Gulf of Mexico to El Paso, by Lieutenant Frs. T. Bryan, Corps Tographical Engineers, dated December 1, 1849.
5. Report of Brevet Lieutenant Colonel J. E. Johnston, Corps Topographical Engineers, descriptive of the country between San Antonio and El Paso, dated December 28, 1849.
6. Report of a reconnaissance of a route from the upper valley of the south branch of Red river to the Rio Pecos, by Lieutenant N. Michler, Corps Topographical Engineers, dated January 28, 1850.
7. Report from Brevet Lieutenant Colonel J. E. Johnston, Corps Topographical Engineers, on the condition of the river Colorado, and probable cost of improving its navigation.

I am, very respectfully, your obedient servant,

S. J. ANDERSON,
Secretary of War ad interim.

Hon. Wm. R. King,
President pro tem. of the Senate.

Bureau of Topographical Engineers,
Washington, July 23, 1850.

Sir: In conformity with a resolution of the Senate of the 8th ultimo, I have the honor to transmit the following reports:

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The surveys referred to in these several reports have been reduced to one scale, and are imbodied in the map attached to this letter.

Respectfully, sir, your obedient servant.

J. J. ABERT,
Colonel Corps Topographical Engineers.

Hon. SAML. J. ANDERSON,
Acting Secretary of War.

SAN ANTONIO DE BEXAR, *May* 25, 1849.

SIR: I have the honor to inform you that, in obedience to orders received on the 9th of February last, I left this place on the 12th of that month for El Paso del Norte, *via* Presidio del Norte and the valley of the Rio Grande—the object of the expedition being to find, if possible, a suitable road for military and commercial purposes from this point to El Paso. Our route lay through Fredericksburg, and thence partly by the old Pinta trail, to the head-waters of the south fork of the San Saba river. The road from this place to Fredericksburg being well known and frequently travelled, I shall omit a description of it. From there to the head-lake or spring of the San Saba, the distance is about one hundred and six miles, the country well wooded and watered, and requiring but little labor to make a fine wagon-road. The approximate latitude of our camp, situated about a mile from the ford of the river, near the mouth of Camp creek, I found to be 30° 53′ 0″.6. From the spring of the San Saba for about fourteen miles, we passed up one of the head-gullies of the river, in which we found five or six water-holes, but were unable to pronounce them permanent. Leaving this point, we ascended to the high table land, and travelled for about one hundred and ten miles in a direction somewhat south of west, without finding even water-holes, and being occupied three days and a night in making that distance. This portion of the route was mostly over the table land, though at times we entered and followed for short distances the head-gullies of the San Pedro river. The table land is thinly covered with the mezquite tree; and in the gullies leading to the rivers heading in that portion of the country are occasional clumps of the live oak. Though this country, for the distance of a hundred and twenty-four miles, was such as to require no labor in advance of the wagon train, yet the great want of water caused us to consider the route as impracticable, except at the enormous expense of digging wells along it. The water we first struck, after leaving the head-gullies of the San Saba, was that of Live Oak creek, a tributary to the Rio Puerco, or Pecos, and running in a southwesterly direction. The distance from the first water attainable in this creek to its mouth is but about eight miles. The Peurco is a muddy, swift, and narrow stream, never exceeding forty, and in many places probably not more than twenty-five feet in width. The ford by which we crossed the animals appears to be frequently used by the Indians, in their incursions into Mexico. The river here was probably not more than three and a half or four feet in depth, but the velocity of the current was so great that the mules were obliged to swim for a short distance. Leaving the Puerco about forty miles above this ford, the road passes through the table hills to the Ojo Escondido, distant about twenty-two miles, in a southwest direction. From this point, for about twenty seven miles, the route is nearly west—passing by one large spring, (the Ahuache,) at a distance of about seventeen miles, and reaching the last prairie spring ten miles further on. From this point to the next permanent water, (a running creek,) the estimated distance is thirty-five miles, though it may be found to be four or five miles less. This creek is followed for a distance of about twenty-five miles to the Painted Comanche camp; and here the road to Presidio del Norte passes to the southward and westward, while the road to El Paso del Norte strikes northwestward towards the pass in the mountains on the Rio Grande, striking that river about ninety-five miles above Presidio del Norte. The road from this camp may either follow the creek to its head, passing through the mountains there, or, by leaving the mountains, directly pass along parallel to their western slope, thus obtaining a road with less labor and less water. The distance from the last water in this chain (the Diablo) to water in the mountains on the Rio Grande cannot exceed thirty-five miles. About twelve miles from the water in these last mountains, the road strikes the river, at a distance of about one hundred and twenty miles from El Paso. After following the river for about seven miles, the road passes through the mountains, which here jut into the river, by the valley of a dry creek, returning to the river by another creek bed, having running water in it. The distance between these points of the river is about thirty miles. Touching the river on coming through this pass, it is necessary to leave it again immediately, passing behind another mountain, striking the river at a distance of thirty-two or thirty-three miles, the creeks followed having no water in them. From this point of the Rio Grande the mountains and table land set back from the river, the valley becomes broader, the quality of the soil better, and the quantity of timber greater. From the ford on the Pecos to the creek in the mountains, there is but very little labor required, and that consists in the grading of a few arroyos, and the cutting of some chaparral in the valley of the Pecos. From the running water in this creek, so far as it may be followed, more labor will be required, though not sufficient to detain the troops, if the fatigue party could gain a couple of days on them between the Ojo Escondido and the mountains. The next labor is in the valley of the creek leading to the Rio Grande; and the other two passes also require labor, but yet cannot be considered as difficult, the main obstacles being in some places the chaparral, and in others loose stones and rocks, and two or three arroyos and side hills in each requiring grading and excavation. From the outlet of the last pass to El Paso, the grading of small arroyos, and the clearing of some timber and chaparral, will require but a small fatigue party to keep the troops in motion. The great want of water by the San Saba route caused us, in coming back, to seek a practicable road by the San Pedro river, striking the "Wool road" in the vicinity of the head of the Leona. The route found and suggested crosses the Puerco at the same point as the other, and follows down its left bank for the distance of about twenty miles, then, leaving by one of its branch valleys, passes over the table land in a southeasterly direction, striking the head-spring of the San Pedro at a distance not exceeding thirty-five miles. The valley of this river may be followed for six or seven miles; and then, leaving the river by its right bank, the road passes along the table land to a point where the river turns to the east. Touching here for water, the table land is again followed to a small creek, distant twelve miles from the bend in the San Pedro. From this creek a southeasterly direction strikes the San Pedro a short distance above its mouth, and, crossing it by an Indian pass, the road crosses the San Felipe, the Pedro, and Toquite, running in a direction south of east to the head of the Las Moras, the distance from the crossing of the San Pedro to the latter point being about fifty miles. From the Las Moras to the head of the Leona the direction is nearly east, and the distance about forty-five miles, the route touching the heads of Elm and —— creeks, and crossing the Nueces. From the head of the Leona the road may strike the "Wool road" at the nearest point, or at a saving of distance, and having, in all probability, an equally fine country, intersect it at the Rio Frio, and thence to San Antonio de Bexar. The great difficulty on this lower route, which has heretofore been reported as impracticable, is found in the country between the San Pedro and Puerco rivers. At the point of departure from the latter, the high table lands—a solid mass of limestone—close in, leaving but a narrow valley, and the cañons or ravines leading out are mostly narrow and rocky. The table land once reached, the next difficulty is on the San Pedro, whose valley is narrower than that of the Puerco, while the table hills are of the same character as the others. In some places fine broad cañons, having gentle slopes, lead down to the river; and it is confidently hoped that a further examination will discover others at suitable points for the road. The cañon leading out towards the Puerco from the head-spring of the San Pedro, and those at the crossing of this latter river, are not difficult; but as much cannot be said of the intermediate ones, or the one by which we left the Puerco. Taking them, however, at their most, a strong fatigue party, with all the implements necessary to the making of a road over such ground, could, in three weeks, at most, render this portion of the route practicable; and it would seem that the saving of distance, and the comparatively great abundance of water, would give this route great advantages over that by the San Saba, were these difficulties three times as great. From the left bank of the San Pedro to the intersection with the Wool road, the country is almost entirely the rolling mezquite prairie, and the only obstacles the crossings of one or two creeks, which are somewhat boggy. A scarcity of timber exists on the table land between the San Pedro and Puerco rivers, and from a short distance above the ford on the latter to the pass in the Sierra Diablo, while here even the supply is not abundant. From this point to the Rio Grande there is least of all; but in the valley of this river there is no lack. The estimated distance from San Antonio to El Paso del Norte, by the lower route, is six hundred and forty-five miles.

The approximate latitudes of places were determined by me to be:

Of El Paso del Norte.

Of the bend of the Rio Grande between the two passes.

Of point of departure from Rio Grande.

Of the Ahuache spring.

Of camp near Conley's wagon-road on Pecos.

Of camp near Indian Ford.

Of point of departure from Pecos.

Of camp near head-spring of San Pedro.

Of camp on creek between San Pedro and Pecos.

Before closing this report, I must bear testimony to the invaluable services of our able guide and friend, Mr. Howard. To his accurate knowledge of the portions of the route previously passed over by him, his correct judgment with reference to country with which he was unacquainted, and his advice and address in Indian difficulties, the success of the expedition is mainly indebted.

Respectfully submitted.

WM. F. SMITH,
Brevet 2d Lieut. Topographical Engineers.

Brevet Lieut. Col. J. E. Johnston,
Corps Topographical Engineers.

San Antonio, Texas, *July* 31, 1849.

Sir: In compliance with orders received from the commanding general of the 8th department to make a reconnaissance of the country between Corpus Christi and the military post on the Leona, with reference to the practicability of opening a road connecting those two places, I would respectfully submit, through you, the following report and accompanying map for his consideration:

The main points which require to be attended to in the selection of a road through this country are, not only that the route should be as direct as possible, but at all times practicable, and that at convenient distances permanent supplies of water should be obtained. As that section of country the special examination of which was designed consists almost entirely of high rolling prairies, the ascents and descents but slight, and seldom offering any obstacle to prevent the passage of a train of wagons, the first condition can, therefore, be easily fulfilled; and the last govern us more particularly in a choice.

From an examination of the surveys of the country, a northwest course was concluded upon—which direction, with the exception of some few deviations in subsequent parts of this report, was very generally followed.

On leaving Corpus Christi, I travelled for twenty-two miles the route from that place to San Patricio, a small village on the Nueces. This road is on the west bank of the last river, heading its principal bends: it runs over a high rolling prairie, with the exception of one or two sand flats, each two or three miles in length.

The prairie is covered with fine mezquite grass, and interspersed with mezquite trees and live-oak moats.

Limestone formation extends throughout this section of the country. Water was sufficient for all travelling purposes, but not for agricultural, the banks of the river being too high to favor irrigation. At the "Twelve-mile Mot" the road first touches the Nueces. The river water is fresh and palatable for the first time at this point—about six miles from its mouth, and twelve from the entrance to the Nueces bay. Previously we passed three very large salt ponds or lakes, but so slightly brackish that the animals drank freely from them. At Baranca Blanca, six miles further on, we again strike the Nueces, at which place water can be obtained. At the distance of six miles from this place is a large pond of fresh and permanent water, very near and to the right of the road. A large flat, covered with sedge grass, commences here, and extends to the river. At the lake we left the main road to the right, and a west-northwest course strikes a second large lake of fresh water near an old settlement, now destroyed, called Le Partie Land—distance, six miles. In dry weather this flat offers no objection to a good road; and in wet weather a good one can be made along a ridge bordering it, lengthening the distance but by a few miles. The bottom consists of a heavy black earth, but not of a "hog-wallow" nature. At Le Partie Land, the road again rises upon a high rolling prairie, over which it is continued until it intersects the Nueces. At two miles from the last water it passes within two or three hundred yards of the river, and a convenient gully enables you to reach the water's edge. Still pursuing the same course, in eight miles we next arrived at Casa Blanca, or White House, the ruins of which alone mark the spot of this once flourishing rancho. It is situated on a slight eminence, at the base of which there is a creek, named Carresse; it is a running stream, but consists of large holes of good water, permanent and fresh, abounding in fine trout and other fish. The house is about a mile and a half from the river. The country around is beautiful, and admirably adapted for grazing. Occasionally, upon a near approach to the Nueces, you meet with some heavy sand hills, but which can generally be avoided by taking a slightly circuitous route; but generally a hard-beaten road can be obtained. The wood is still the mezquite and live oak.

Between Casa Blanca and Nueces several fine streams were crossed; from Casa Blanca to La Gorta, six miles; from La Gorta to Radamenia, two miles; from Radamenia to Spring creek, thirteen miles; from Spring creek to Nueces, fourteen miles. At the point where we struck the Nueces, a splendid rocky ford was found. As we approached the river, the prairie made a gradual descent to its bank, the edge of which was about twenty feet above low-water mark. The bank was of an almost pure limestone, easily worked; the descent to the water's edge not precipitous, having been able to lead our horses down it with ease. There was no river bottom land to pass through—perfectly clear prairie, free from all timber, bordering immediately upon the river at this point. Above and below, at a short distance from the ford, the timber in the bottom was heavy and thick, consisting of the elm, cottonwood, oak, &c., and covered with a dense growth of weeds. The bed of the ford was of solid limestone, and of sufficient breadth for several wagons abreast.

The width of the river was about forty yards—its depth, at the time of low water, not more than two or three feet; for, notwithstanding there was a considerable rise in the river at the time I crossed it, still the horses were not compelled to swim more than three or four yards of its entire width. The current was not swift, and in consequence would afford no obstacle to fording it with safety. On the eastern shore the bank was but five or six feet above low-water mark, and forming a solid footing.

On this side there was but a narrow strip of heavy timber and bottom land, about twenty yards in width, and then you rise to a mezquite flat. A better and more convenient ford in every respect could not be found; for miles up and down the river, no point could be selected possessing these advantages.

Here we saw huts and other signs of Indian encampments, showing that the experience of those acquainted with almost every foot of ground in the country had led them to make the same choice.

The water of the Nueces here presents a muddy appearance, contrasting greatly with the clearness of its water at the crossing of the Wool road. It is pleasant to drink, notwithstanding the earthy matter it holds in solution. On leaving this river, we followed a north-northwest course, to strike the Frio at its nearest point, to enable us to examine the nature of it; in eight miles from the Nueces we reached it. It will be seen from the map that, in order to accomplish this examination, our course was constantly changed until we crossed the Laredo road, occasioned by following to an extent the principal bends of the river.

The mezquite flat through which we passed on first leaving the Nueces proved to be about a mile in width, when we came to a beautiful valley, perfectly clear, and covered with fine nutritious mezquite grass. Continued along this valley to the dividing ridge of high land between the two rivers which headed it. The banks of the former river, at the point at which we approached it, were vertical, about forty feet high, but free, for a short distance, from timber. Already, two large water-holes and a creek of good water had been passed in the last eight miles, continuing along the ridge which remained in sight of the Frio, heading its principal bends, and never more than three or four miles from it. This ridge was a perfect dead-level prairie, covered with excellent grass and mezquite trees. At intervals the ridge would pass within fifty or a hundred yards of the river, and at such points the water could be easily reached, being generally free from bottom timber. At four miles from first point, touched the Frio a second time; at ten from the latter place, a third time; and at each place could water the horses with ease. Between the last two points found two creeks of excellent water, the water standing in holes. Upon examining the bottom land of the Frio, we found it difficult to penetrate, very heavy timber being generally found close to the river, of the same description as on the Neuces; then, from one to two miles, a thick undergrowth of chaparral, together with mezquite and cactus of every description. On leaving third point, found it difficult to proceed near the river; besides bottom land, found deep ravines and gullies, and large hews, impossible to pass in their present state. For the first time we encountered ranges of hills, setting into the river in a direction perpendicular to its course. The distance between them is generally a mile from base to base, extending but a short distance back into the country, and then gradually merging into the high prairies between the rivers. They approach to within a mile of the river, and then abruptly break of in the form of a pair of steps, and are covered with loose stone, and almost impassable chaparral. Upon examination, we found our hitherto circuitous route, since leaving the Nueces, could be easily avoided by pursuing a due west course from the ford, upon the high ridge already spoken of, until within two miles of the Laredo road, and then again resuming a northwestern course. Distance from third point to a fine creek, three miles from the road, twelve miles. In addition to this creek, we had already passed four others, at very nearly equal distances from each other—one a running stream, but the rest consisting of large water-holes.

The examination of the Frio caused the principal deviation in our course: in consequence, I decided upon avoiding the crossing of that river, notwithstanding a more direct course between the two limits of the road would have required its passage twice.

This stream is, at certain seasons, subject to tremendous freshets. Its banks, within miles of the first point at which the road should cross it, are almost vertical, and between forty and fifty feet in height; its bed of a boggy nature, and consequently unfit for a ford. At the second point, you meet with three or four large hews before reaching the natural bed of the river, and it would require great labor to make a passable ford. By keeping on the west bank of this river, you can avoid all these obstacles—thus leaving the Neuces, over which the road is compelled to cross, the only river on the route subject to freshets. As a general thing, I may here remark concerning the land both on the Frio and Leona, from these rivers back, that it may be divided into four parallel strips—the first, next to the river, consisting of heavy timber, and a heavy black soil; the second, a mezquite flat, of small width, and the soil of a lighter nature, and very fertile; the third, a range of low hills, covered with loose stone, and thick chaparral; the fourth, a wide open prairie, the soil generally very dry, but covered with excellent grass, the latter article being generally very scarce close to the rivers: and again you sometimes find a second line of chaparral hills beyond the prairie land Each of these strips is distinct, and parallel to the general course of the river.

Our course after leaving the last mentioned creek was north-northwest, intersecting the Laredo road about three miles from its ford on the Frio. Travelling on, we passed over, or rather continued on, the same level prairie, and at thirteen miles from the Laredo road again touched the river.

About four miles from the same road, passed an excellent stream of water—course from fourth point of Frio northwest; but soon, on attempting to follow it, we found ourselves in a dense chaparral. After riding an hour and finding no prospect of its becoming better, we struck due west, and in two miles again reached a fine rolling prairie, which extended as far as the eye could reach; and we were then able to pursue without difficulty our former course.

Soon we struck on an Indian trail, and for many miles we followed it, as its direction was the same. It led us to the crossing of many creeks, where we found a large supply of water—one at six, and another at twelve miles from where we last touched the Frio, and others at intermediate distances. At the last creek, we left the trail, as it apparently seemed to turn towards the Nueces. Continuing on eight miles further, we crossed a large creek, emptying into the Frio. On its banks seemed to have been at one time a regular camping-place for Indians, as we there found many deserted stone buildings, evidently built by Indians for a permanent camping-ground. From this creek our course was still the same, and still over a high rolling prairie, from one to four miles from the river. When within sight of the junction of the Frio and Leona, and about five miles from the mouth of the latter stream, we again touched the Frio for water, having gone a distance of ten miles without meeting with any. The nature of the bottom land here the same. Resuming again our old trail, we continued on for several miles, and then met a hard-beaten Indian trail, which guided us to an excellent gravel ford, about the point we wished to cross the Leona, fourteen miles from the upper Presidio road. Within a mile of reaching the ford, there was a dense chaparral, but, owing to the trail, we were easily enabled to reach it. The Leona is a beautiful stream of excellent water—limestone. The banks are nearly upon a level with its surface. It possesses a hard gravel bottom—its width about thirty, and its depth not more three feet, and flowing with a gentle current. It is said never to rise above its present level—the stream not being of sufficient length to be affected by heavy rains. The land immediately along the river is rich, and covered with heavy timber. A few hundred yards below the ford are fine falls, and the river not more than twelve feet in width. Immediately upon leaving the ford, you find yourself in a beautiful mezquite flat—also a favorite camping-place of the Indians. We still followed the trail, which led us through the finest portion of the valley between the Leona and Frio. This valley, for the first ten miles, is about a mile wide, and bounded by low chaparral hills—those on the east side of the Leona commencing a short distance above the ford, and continuing, except at some few intervals, the whole length of the Leona to its head; and it is difficult to make your way through them.

Within four miles of the upper Presidio road the valley widens, and is sixteen miles in width along that road.

Gradually becoming more elevated, it spreads out into a high flat prairie, and extends on unbroken until it rises into the range of hills which stretch across from the Frio miles above the head-springs of the Leona. Along the Wool road the prairie is but about eight miles in width.

A good dry-weather road can be obtained over it, but, like all prairie roads, would become heavy in very wet weather. Two miles below the upper Presido road, found a large water-hole, and also one above it, at the distance of five or six miles. Between this last creek and the Wool road no other permanent water can be found, although, at convenient points, the river could be approached, and roads cut into it, to supply every demand. The distance between the upper Presidio and Wool roads is about thirty miles. Owing to the greater quantity and greater density of the chaparral along the Leona, a great deal of labor can be avoided by keeping nearer to the Frio than to the Leona. Our course intersected the Wool road about four miles from the post—a branch from this road leading to the post situated above it. For the sake of reference, the following list of distances between water is subjoined:

From Corpus Christi to Twelve-mile Mot	12
Baranca Blanca	6
Lake	6
Le Partie Land	6
Casa Blanca, or Carresse	8
La Gorta (creek)	6
Radamenia (creek)	2
Spring creek	13
Ford on Nueces	14
1st point on Frio	8
2d point on Frio	4
3d point on Frio	10
Creek	12
Laredo road	3
4th point on Frio	13
Creek	6
Creek	6
Indian Camp creek	8
5th point on Frio	10
Ford on Leona	16
Upper Presidio road	14
Wool road	30
Post on Leona	4

From Corpus Christi to the military post on the Leona, two hundred and seventeen miles, by the route travelled during this reconnaissance. From the examination, we found that in several places the course travelled was somewhat longer than the length of the road would necessarily be, in consequence of leaving it to further our knowledge of the country; but twenty miles would easily cover such deviations. The only labor necessary to complete the road consists in freeing it from timber; and all of the latter placed together would not cover a distance of six miles to be cleared.

In conclusion, I may remark that the country passed over offers every facility for opening a good road; and, with comparatively little labor, communication can be had between the two places by any mode of conveyance. With the exception of a few settlements near Corpus Christi and San Patricio, you meet with none for the whole distance, and, in consequence, can obtain nothing along the road beyond the wild productions of nature.

There was an abundance of game—wild cattle and deer in numbers. Most of the creeks and rivers abounded in fish of different varieties—the trout in greatest abundance.

Whilst at Corpus Christi, I visited St. Joseph's island, and attempted the sounding of Aransas pass. Owing to the heavy swells from the gulf, was not able to accomplish the purpose with satisfaction; but from this, and a previous attempt in January last, the depth of water to be relied upon in passing over this bar may be set down at ten feet. Lamar, on Aransas bay, is the only point to which a vessel able to cross this bar can approach and be close to the shore. At this place a shell reef runs out from shore; and at its extremity nine feet water can be obtained, so that a plank may be thrown from the ship to the reef. Aransas pass is evidently improving and becoming deeper—a greater body of water being thrown through it in consequence of several other passes connecting this bay and gulf becoming gradually closed.

Respectfully, sir, your obedient servant,

N. MICHLER, Jr.,
Brevet 2d Lieut. Top. Engineers.

Major Geo. Deas,
Assistant Adjutant General 8th Military Department.

Camp at Las Crucitas, on Rio Grande,
October 3, 1849.

Sir: I have the honor to report that, in obedience to your orders, I proceeded, September 21, from the camp opposite El Paso, with the escort designated, to make a reconnaissance of the Sacramento mountains, and ascertain if there existed a pass through them practicable for wagons. Leaving camp at 2 p. m., and taking the Salt Lake road, the day following I reached the Arroyo Solidad, the first water from the Rio Grande—estimated distance thirty-eight miles, and general direction north 4° east. This creek rises in the Sierra Solidad, its head-spring being about one mile distant from my camp, and was represented by the guides as being generally dry, except at the spring. The next water on the road (which I still followed) was that of the Ojo de San Nicolas, distant twenty-one and a half miles, in a direction slightly east of north. From this point, leaving the wagon-road, I followed a large Indian trail to the Cañon del Perro, the nearest point of the Sierra Sacramento—distance thirty-two miles; course north 69° 45′ east. This cañon furnishes a fine supply of water, but is so narrow and rough that the Indian trail, in place of following it, leads directly over the mountain. Passing along parallel to the base of the mountain, as near as the rocky spurs would admit, I crossed a small running creek, distant ten miles from the Cañon del Perro, and reached the creek "El Agua de Nuestra Señora de la Luz," nine miles beyond. The general direction from Cañon del Perro was north 10° 10′ west. The cañon from which this creek flowed was but little wider than the first one mentioned, and, at the distance of one and a half miles from its mouth, branched into two narrow ravines. From this creek I followed the base of the mountain for six miles, in a direction north 15° west, and arrived at the entrance to what was said by the guides to be a pass through the mountains. A ride of two and a quarter miles, in a direction about north 73° east, brought me into the narrow, rocky valley of a salt creek. Finding that there was no pass here, I made my way out of the hills by travelling down the bed of the creek for about two miles, and then taking an Indian trail leading off to the northeast, across several spurs and intermediate valleys; at the distance of five miles, entered the valley of La Cienegu—a marshy creek flowing between the Sierra Sacramento and Blanca. The width of this valley was about five miles; but the great number of small spurs putting out on either side from the mountains to the banks of the creek would cause a considerable amount of labor to be laid out on them before being practicable for wagons. About seven and a half miles above the point of entrance into the valley, the creek forked—one branch coming in from the southeast, and the other from the north of east. I first examined the left branch; but the difficulties encountered in a distance of three miles, and the appearance of the valley ahead, where it became narrow and rugged, caused me to retrace my steps, and attempt the valley of the other branch. Crossing the left branch with great difficulty, I found, after a mile's travel in the second valley, that it possessed no advantages over the first, and started for the Rio Grande. The portion of the Sierra Sacramento to the south of the Cañon del Perro I did not examine, for the reason that the guides informed me that there was neither water nor a country practicable for wagons. On my return, after arriving at the Salt creek, I left the trail made in going up, passed below the running water of "El Agua de Nuestra Señora de la Luz," and struck for the southern point of an extensive range of white sand hills, situated in the middle of the immense valley lying between the Sierra Sacramento and the mountains near the Rio Grande. This course (south 39° 30′ west) led by a brackish spring, and about one mile and a half to the right of Salt lake. From the sand hills to the Ojo de Ste. Nicolas, the course was south 53° 30′ west, and distance sixteen and three-quarter miles. Agreeably to orders, on leaving the Arroyo Solidad, I entered the valley of the Rio Grande by the "Paso de los Alamitos," a broad elevated valley connecting the Salt Lake and Rio Grande valleys, and presenting no obstacle to the passage of wagons between the two. The distance from the Arroyo Solidad to the point of the Rio Grande about thirty miles above the rancho opposite El Paso, is about twenty-one miles, and the direction south 30° west.

I am, sir, very respectfully, your obedient servant,

W. F. SMITH,
Lieutenant Topographical Engineers.

Captain J. E. Johnston,
Top. Engineers, Brevet Colonel U. S. A.

San Antonio, *December* 1, 1849.

Colonel: I have the honor to report that, in obedience to orders from headquarters, 8th military department, of June 9, 1849, I left this city, with a party of thirty men, for El Paso del Norte, *via* Fredericksburg.

June 14, 1849, *first day.*—Made fourteen miles to a water-hole, where we bivouacked for the night. Country from San Antonio to this place is a rolling prairie, having abundance of mezquite grass, which affords excellent pasturage for horses and other stock; road, in many places, lies over limestone rock, which makes it rough and injurious to wagons. Country somewhat hilly, and covered with clumps of live-oak and other timber.

June 15, *second day.*—Country of the same character as yesterday, except that the hills are higher and more frequent. The road, too, is more rocky and uneven; hills on the left lie quite close to the road. Leaving Misenbergs, the road is still rocky and uneven; on the left hand is a deep ravine with bluff banks. After passing the Cibolo, four miles from Misenbergs, the road becomes very good, being smooth and level. The Cibolo, where the road crosses it, is a dry ravine. About two miles above there is plenty of pure water. Stretches of prairie, with groves of live oak, occur at intervals. Reach Post Oak springs at 11½ a. m., and encamp. The springs are to the right of the road, and in the flats.

June 16, *third day.*—Left camp at 8 o'clock this morning, and marched about two miles from Post Oak springs; passed between two ranges of hills forming quite a gorge. Country around is beautiful, consisting alternately of rolling prairie and flats, which latter are at times boggy, and difficult for loaded wagons. Next stream is Spring creek, the water of which is beautifully pure and clear, flowing over a pebbly bed. Limestone occurs on its banks; timber of large size is also found in the immediate vicinity. Country from this creek to the Sabinal is a rolling prairie, with many clumps of trees. The road at Sabinal becomes very difficult, the sides of the ravine through which the creek flows being very steep and stony. At three miles from Sabinal, we passed Wasp creek, through the same kind of country, except that the hills are higher. Many flats occur in the intervals, covered with a luxuriant growth of mezquite grass and wild rye. The crossing at Wasp creek was very difficult, the wagons all stalling, and obliging us to double teams. Country continues the same to Guadalupe river, a distance of four miles. Passed the Guadalupe and marched half mile further to Sisters creek, where we encamped at 3 o'clock.

June 17, *fourth day.*—From Guadalupe river to Fredericksburg, the country continues of the same character, being an alternation of prairie and post-oak woods. The grazing, either on the prairie or in the woods, is excellent, and very abundant. Sisters creek crosses the road several times within seven miles from Guadalupe river. At ten miles from camp, we entered a beautiful valley, the ascent from which was quite steep. There is a trail leading to the right across the mountains, which shortens the distance to Fredericksburg considerably, but is entirely impracticable for wagons or any wheeled vehicle. Grape creek crosses the road twice within half a mile, at the distance of thirteen miles from our camp of last night. Country is well wooded, and grazing abundant. The Peidernalls next occurs, at seven miles from Grape creek, and five from Fredericksburg. There is a small stream of water midway between these two. Arrived at Fredericksburg at 3 p. m.

June 21, *eighth day.*—We were obliged to remain at Fredericksburg three days, in order to repair our wagons, which were somewhat out of order. These repairs completed, we left on Thursday, and marched eight miles to our encampment on Banon's creek. The course on leaving town was north 25° west; it afterwards changed to 10° west. The road is very good, being the one travelled to the German settlements on the Llano. The country is beautiful, well wooded and watered.

June 22, *ninth day.*—Marched about nine miles to Pecan spring, which touches the road on the left. The country continues of the same character, with plenty of wood and water. Leaving Pecan spring, we entered a deep valley, through which the road wound. The descent was abrupt, but easily passed. Granite begins to appear at this place, along with pieces of quartz. Passed several places where there appear to have been large bodies of water during the rainy season. The beds of such ponds are of sandstone, in large masses. Road near camp lies over a reddish sand. Encamped in a post-oak grove at 11 a. m. Course to-day, north 10° west.

June ,23, *tenth day.*—Marched about four miles this morning to the place where the emigrant trail leaves the road to the settlements on the Llano. In this distance there were two places unfavorable to the passage of wagons, but not sufficient to cause much difficulty. Water appears, but it is not permanent. The emigrants' road to the west is plainly discernible over the prairie. The country through which it passes is varied—sometimes open prairie, the post-oak country, and the hilly. We passed several places where water was standing in quite large pools, but it is not permanent. The soil over which we passed was light and sandy, and in several places of a red color. Granite occurs in several places, in large masses. Arrived at the Llano about one o'clock, and found the river so high as to be impassable for the present. Encamped about twelve miles above the German settlements.

June 24, eleventh day.—Started this morning at nine o'clock, and forded the river without difficulty, it having fallen during the night and morning about two feet. The banks on each side are rough, rocky, and precipitous, and difficult of ascent and descent. After leaving the Llano, the road is very good to Comanche creek, which is easily crossed. This creek affords good water, and it is a permanent running stream. From Comanche creek, the road lies over the same kind of country—rolling prairie and hills—to the head of Honey creek, where we camped at 4 o'clock.

June 25, twelfth day.—Left camp this morning at 8½ o'clock. The road here was between two ranges of hills. Those on the left (west) are extremely rocky and precipitous. Road continues level and good for about three miles, when it runs through a gap between two hills, from the top of which the Lammeding country can be seen for a great distance. It afterwards passed for nine miles over an alternation of hills and prairie, till we left it. After leaving the road, we marched north 20° west three miles to the San Saba. The country for these three miles was hilly, and covered with large slabs of limestone. The banks on the south side of the San Saba slope gradually to the water, which is about eighteen inches' deep, flowing over large slabs of limestone rock. On the north side the banks were steep, and of soft earth, rendering the passage difficult. We were obliged to cut away the bank in order to pass.

June 26, thirteenth day.—Detained in camp to a late hour to-day by violent rain. At eleven we started, and marched about five miles to the head of Camp creek, where we halted for the day. Next water is Brady's creek, fifteen miles further on; no reliable water in the interval We have now left the road, and follow the Indian trails whenever the direction coincides with our own. Ground over which we pass is very rough, and similar to that on the other side of the river. Several places on the road appear to have had water in them; there was a little when we passed. The beds of these places were of rotten limestone, which was very abundant on the hills. Water of Camp creek is good and abundant.

June 27, fourteenth day.—Country to-day was a high and beautiful prairie, easily travelled over, so that a road could be had in any direction. The wood was mezquite, affording fuel merely; grazing good. Many dog towns appear, with their inhabitants—prairie dogs and rattlesnakes. Arrived in camp at 4 o'clock, on Brady's creek.

June 28, fifteeth day.—Left south fork of Brady's creek this morning at 6 o'clock, and marched through a beautiful country to the head-waters. The road from the San Saba to the head of the creek is through a prairie covered with scattered mezquite and mezquite grass. There is abundance of wood for culinary purposes, and the grass abundant and good for grazing. The water in Brady's creek, at the head, and in the south branch, is in large pools, extending sometimes to the length of a mile or more, and having a depth of six or eight feet. The country is level, of great elevation, and can be travelled over with wagons in any direction. The waters of the creek furnish large quantities of catfish.

June 29, sixteenth day.—Started this morning at 6 o'clock, taking a trail leading to the west. After marching about eight miles, we arrived at the head-springs of the creek. Our course was then west for thirteen miles, when we struck Kickapoo creek at 3 o'clock. The country between Brady's creek and Kickapoo is most admirably adapted for a natural road; not a single place where ten minutes' work is needed. Our whole route was over an open, level mezquite prairie, requiring nothing but travelling to make a road in any direction. The timber is mezquite—only enough for cooking. The grazing was excellent. We passed one or two small runs of water—not permanent. Dog towns and rattlesnakes abounded most of the way. The Kickapoo is a large stream of good, clear water, opening out occasionally into large pools, from which we obtained catfish and trout in abundance. The grazing was excellent and abundant. The timber on the banks was of large size, consisting of live oak and pecan.

June 30, seventeenth day.—Left camp this morning at 6½ o'clock, and crossed the Kickapoo without any difficulty, beyond cutting out the brush. Country becomes hilly, stony, and barren, being a succession of gentle elevations and depressions, covered with broken pieces of limestone. We had hills to the south quite near us. Those to the north of the Concho were also visible. In several places the grazing seemed very good; but there was an almost total absence of anything like timber. We passed Potato spring at two and a-half miles from Kickapoo. Reached Lipan creek at 12 o'clock, and made our camp. The water here is running, and, like the Salado, near San Antonio, opens out into large pools. It is of good flavor and pure. Timber of pecan and live oak, and very heavy. Struck Lipan creek to the right of the trail, which we followed, and which we suppose to be Torrey's.

July 1, eighteenth day.—Left Lipan creek at 6 o'clock, crossed it without difficulty, and came to Antelope creek. Still following the trail, we went through "Pass-in mountains." The country is high, rolling, and stony, except in valleys, where there is excellent mezquite grass. A road can be easily made here by removing the loose stones from before the wagons—no other labor being necessary, except clearing away weeds and bushes whenever a stream is to be passed. Spades to cut away the banks have not been used since we crossed the San Saba. Timber on the banks of this creek is pretty large; grazing is good. Course to-day, north 10° west, and west.

The road yesterday and to-day should probably bend more to the northwest, in order to get further into the valleys, and avoid the stony ground over which we have passed. Both yesterday and to-day, the waters on which we encamped furnished very large fish—catfish, trout, and perch. Rattlesnakes and prairie dogs continue in abundance. After leaving Kickapoo creek, marched about three miles southwest towards its head; then struck northwest. The road before reaching Kickapoo is over prairie, with scarcely any stones.

July 2, nineteenth day.—Left camp this morning at 5½ o'clock. Country continues the same as yesterday—an alternation of gentle elevations and depressions, caused by spurs from the mountains on the south of the Concho. There is an almost total absence of timber; now and then there is a solitary live oak, and to the right may be seen some scattering mezquite. To-day and yesterday, our course bore for the Green mounds, which have been in sight, north 5° west. At five miles from camp, came to the South Concho—quite a large stream, with a gentle current. Crossed here easily, after clearing the brush from the banks. Still continuing west for eight miles, we crossed Dove creek. Crossing effected without any difficulty, after cutting out the brush from its banks. Both of these streams have heavy timber immediately on their banks, but no further. The water of both is good and runs gently, in a northern direction. Grazing is only tolerable, the grass being old and dry. Pecan timber of large size is found.

July 3, twentieth day.—Left our camp on Dove creek this morning at 6 o'clock, and rode about three miles to a small branch, which crosses the trail. This was Good Spring creek; the water was pure and very cold. Our course now is due west, occasionally diverging from it to avoid a spur of the hills, or to head an arroyo. The line forming the Pass-in mountains and Green mounds is due east and west. From the half-way point between Dove creek and Lipan Camp creek, the twin mountains bear north 45° east. Pass-in mountains bear west from Brady's creek (ahead.) These two are landmarks scarcely mistakeable. Arrived to-day at the main Concho about 3 o'clock. The country at Green mounds rocky and broken, but did not offer much difficulty to the passage of wagons. After passing Green mounds, the country becomes rolling prairie. The grass all along our route to-day and yesterday appeared dry and burnt up, offering but little sustenance to our animals. We fell in, on the banks of the Concho, with the emigrant road to California, which we expected to find at the Green mounds. It lies to the south of Green mounds.

July 4, twenty-first day.—Marched three miles to-day, merely to change camp and find good grazing for the mules.

July 5, twenty-second day.—Started this morning at 7 o'clock, and got into camp on the banks of the Concho at 1 o'clock. Crossed the river at nine miles from camp of this morning. It runs here in a northeast direction. One mile further, crossed the north fork of the Concho. At four, six, and fourteen miles from camp, we crossed deep arroyos, running north into the Concho; these, however, presented no difficulty.

At the Green mounds this road was visible to us; but as it was to the south of us, we continued on the trail we were following until we arrived on the Concho, where the wagon-road is deeply marked on the prairie. The river is reached at seven miles from Green mounds, but the road follows the southern and eastern bank for twelve miles before crossing. For the last two days wood has been very scarce; grazing only tolerable, grass being parched and dry. The water of the Concho is good, affording catfish, trout, &c.

July 6, twenty-third day.—Road to-day continues hard and excellent, having hills on both sides. Here rocks appear statified, as also at Kickapoo creek, strata varying from six to eighteen inches in thickness; rocks are limestone. To-day, came to the head of the river; it rises in a valley between two ranges of hills, in low, swampy ground, appearing in pools, covered with leaves like those of lotus plants. Grazing here is pretty good; some timber to be had at a distance from the water.

July 7, twenty-fourth day.—Left head of Concho this morning at 7 o'clock, and travelled twenty miles over a hard, smooth, and level road to this place, where there are two water-holes of large size. Country over which the road lies is situated between two ranges of hills of small elevation, and is extremely destitute of wood. For the first nine miles there was plenty of water standing in holes, but not permanent; after that there was none until we came to camp. The country is extremely dry; grazing very indifferent.

July 8, twenty-fifth day.—Came to-day twenty-two miles to the Wild China ponds, which were entirely dry. Hills and mountains appear on our left and in front; country around us rolling prairie; no water to-day, and obliged to camp without it. Five miles from our camp of yesterday morning, Connelly's trail leaves the road, bearing to the southwest. There is, probably, abundance of water at these water-holes during the rainy seasons; the ground about them is soft, moist, and springy, offering a chance for finding water at no great depth. To-day and yesterday, saw large droves of mustangs. Soil to-day is light and sandy; grazing good, but no wood.

July 9, twenty-sixth day.—Arrived in camp on the Pecos river at 1 o'clock to-day, having left the Wild China ponds at four this morning. At Gap water, in the Caette mountain, thirteen miles from camp, we found a little dirty and brackish water, which sufficed to water our mules, but was unfit for any other purpose. The road runs through a pass in the mountain; this pass is very winding, and goes down very deep into the mountain, the rocks rising to several hundred feet above it. The road through this place was cleared for us by California parties which had preceded us, so that our wagons came through without difficulty. Between Wild China and Caette mountain, high mountains appear to the south and southwest. Leaving Caette mountain, the road passes over an exceedingly barren country, sandy, and producing scarcely anything but prickly pear. This continues to the Pecos, which is not visible until you come directly upon it, its banks not being marked by trees or anything different from the surrounding plains. To the southwest, high mounds and table lands appear. The road bears to the southwest, crossing many large Indian trails, all of which bear southwest.

July 10, twenty-seventh day.—Spent to-day in crossing the Pecos, which was accomplished by making a raft of spare wagon-tongues and hounds, floated by empty water-casks. Everything was thus safely taken over. The Pecos here is a muddy stream, of a dark red color, and, running through the plains, has very much the appearance of a canal. The prairie does not change in appearance in the least as you approach the river, and one is immediately on the river before he is aware of its proximity. The crossing which we used is known as the "Horse-head crossing"—no doubt from the number of horses' heads which lie scattered near. The soil here is very light, like ashes, and a camp soon becomes intolerable—especially in windy weather. Grass here is coarse and hard, and appears o have but little nourishment. There is no wood at all to be had. The banks where we crossed were low, and tolerably firm; but this must be he case only in dry weather. In other places where we approached the water, horses sunk to the girth in the boggy soil, which was of most enacious clay.

July 11, twenty eighth day.—Spent to-day on the west bank of the Pecos, in order to give men and animals some time to recruit. Soil on this side same as on the other, being very light and dry, and moved into clouds of dust by every breath of wind. The grazing is somewhat better than on the eastern bank, but still only tolerable.

July 12, *twenty-ninth day.*—Left camp this morning at 6 o'clock, and marched about five miles over the same flat and desolate prairie; afterwards the country became covered with thickets and chaparral, and then continuing to alternate between chaparral and prairie, more or less open. The river continues on our right, our course having been west and north-northwest. The current is quite swift, but not as much so as that of the river at San Antonio. The banks continue to be so high that it is necessary to water the animals by means of buckets. When cut away, they become boggy. Our present camp is a mezquite chaparral in a bend of the river. Grazing to-day tolerable.

July 13, *thirtieth day.*—Country to-day seems as yesterday—the ground, here and there, being covered with saline efflorescence. This appears at every few yards along the road, impregnating the water and the grass. At six miles from camp, we came to the falls of the Pecos, where the water tumbles over several steps of rocks. The total fall is about ten feet. Near our camp to-night there is a pond containing very pure and clear water, but it is also very salt. Wild fowl abound in its vicinity. The river is crossed here by several Indian trails. At this point the depth is about five feet; bottom of gravel, firm and hard. Our fuel to-day is mezquite brush. Grazing pretty good.

July 14, *thirty-first day.*—Road to-day went through a kind of ravine, the sides being of red sandstone and clay, in thin layers. The soil of the road next becomes sandy, and then full of lime, varying every few miles. At ten miles from camp, the river bends into the road; and in the valley there is very good grazing, and easy access to the water. Two miles from this place, we crossed a very small stream, or rather succession of water-holes, for the water was not running. This we supposed to be Toyat creek, from its situation. The water was very salt. Ground here was broken, and in wet weather must be very boggy. On the left of the road, further on, there is a succession of pools of very salt water. Country here is more rolling, and more covered with brushwood than near the Horse-head crossing.

July 15, *thirty-second day.*—Started this morning at 6½ o'clock, and came to this camp, twenty-two miles, through a country which, for the first four miles, is somewhat hilly and uneven, and then becomes a level plain, on which there is very good grazing. At twelve miles from camp, came to a pond of extremely salt water, which extended on our right for three miles. At fifteen miles from camp, struck a range of hills of small elevation, running along the road on the left. Country, except for these hills, rolling prairie. Encamped at 3 o'clock in a horse-shoe formed by the river, where there was very good grazing, but no wood.

July 16, *thirty-third day.*—Left this morning at 6½ o'clock, and marched over a hard, flat road to this camp, a distance of sixteen miles. A great part of this road was of sandy soil, and some of it of clay. On our left the ridge of hills still accompanied us. The Pecos is on the right all the way, and always within about a mile of the road. Our course has been variable, as the road follows the bend of the river, which is extremely crooked, and full of "horse-shoes." The general direction is north 35° west.

July 17, *thirty-fourth day.*—Came to-day fourteen miles to Saline creek;

where, not finding good and sufficient grazing for our animals, we left the road, and again came to the Pecos, to a place where the grass was tolerable. Banks here were high and steep, so that we were obliged to resort to buckets for watering animals, as everywhere else on this river. Country now becomes hilly, and the road is more sandy. For the first two miles the road was soft and boggy; afterwards, as the country becomes high, road runs alternately over hard, stony ground and sandy soil. Saline creek was entirely dry where we crossed, though the guide states there is plenty of water some miles nearer its head. The ground in the vicinity is covered with efflorescence of salts. Hills appear now on both sides of the river—the road sometimes running over them, and sometimes between them and the river.

July 18, *thirty-fifth day.*—Left camp this morning at 7½ o'clock, and marched for ten miles over a prairie more or less undulating. Three miles from camp we came to the first of those deep, precipitous ravines which mark the upper parts of this sinuous course. After the first ten miles, the road enters the hills, through which it winds in all directions, the general course being north 60° west. The road to-day is even and hard, and mostly over limestone. In several places the earth had caved in, presenting the appearance of unfinished wells. The hills are bare and stony; no trees on the route. Encamped at 2 o'clock on Delaware creek, sixteen miles from the Pecos. Grazing here is excellent; the water of this creek is clear and beautiful, but slightly impregnated with sulphur.

July 19, *thirty-sixth day.*—Spent to-day in camp, in order to recruit the animals, which are much fatigued.

July 20, *thirty-seventh day.*—Encamped again to-day on the banks of Delaware creek, after a march of twenty-three miles. The road leads through the hills, and is very crooked indeed, taking nearly all directions. Our general course is west to the southern point of Guadalupe. There are three high peaks of the Sierra Guadalupe which serve as landmarks for a great distance. The soil of the road is sometimes limestone and sometimes sand. Grazing to-day is very poor indeed, and very little wood to be had. Our camp is a small valley, where there are three fine springs; one is highly impregnated with sulphur, another with salts of soda, while the third is of the best and purest water, suited for the use of man and beast. Grazing at this camp is very good.

July 21, *thirty-eighth day.*—Our general course continues west, though we are obliged to take all directions around the spurs of the mountains. Yesterday and to-day we saw the first dwarf cedars. Wood is very scarce indeed—scarcely enough to cook with, and even that brought from a distance, and collected with much trouble. The road to-day lies very high, over ridges and spurs of the mountain, but is nevertheless very good. Ten miles from this morning's camp there is a deep ravine, where there is water in holes, but not permanent. Arrived at 1 o'clock at Independence spring, the water of which is very fine, being pure and cold. Here we found the first trees we have seen since we left the Concho. Grazing here is pretty good.

July 22, *thirty-ninth day.*—Marched to-day six miles to a fine spring of pure cold water, at the foot of Guadalupe, and encamped. The spring is about one-fourth of a mile to the right of the road, in a corner of the mountains. Here we found excellent grass for the animals, good water, and fine large timber, of pine, cedar, serren, &c. The camp was separated from the road by a rocky ravine, which cost us some trouble to cross. The road to-day is firm and hard, and, as for several days past, lies sometimes high on the ridges, and then again follows the valleys. We are now at the foot of Guadalupe, and the mountains are covered with forests of large timber, and contain many springs of excellent water.

July 23, fortieth day.—Spent this day in camp, in order to recruit the animals.

July 24, forty-first day.—Left camp this morning at 5 o'clock, and cleared the ravine without trouble. About three miles from camp, came to a fine spring, to the right of the road, at the commencement of the descent of the first hill. The descent was very rough, and continued for about two miles down the mountain side. The road continued rocky and rough for seven miles, when it became smoother, and finally deep and sandy. At twenty miles we came upon a range of hills of pure white sand, extending some distance on the left of the road. At twenty-four miles, the dry bed of what seems to have been a salt lake appears. It is a perfectly smooth bed of white sand. The ground was covered with efflorescence of salt. At 1 o'clock, arrived at Ojo del Cuerpo, which is a spring of brackish water in the open prairie. The grazing is very poor, and there is no wood. We found a hole, dug under the bushes by some California party, which furnished us tolerable water. The spring of Ojo del Cuerpo is quite strongly impregnated with sulphur. The road to-day has been rougher than any we have had since leaving Fredericksburg. Course to-day north 70° west; distance twenty eight and a half miles.

July 25, forty-second day.—Left camp to-day at 2 o'clock p. m., and marched sixteen miles to a place on the prairie where we camped, without water. The grazing at this camp was excellent, as well as for several miles back. The road is excellent, being smooth and hard and very level. We passed several salt plains, and some lakes of very salt water, about three miles to our left. Some of these plains were dry beds of lakes, and composed of glittering white sand. Reached this place at 6 o'clock in the evening, and encamped. There is no wood to be had here. The distance from Ojo del Cuerpo to Connedos del Alamo is thirty miles—too long a march for one day: so we were forced to make two marches of it.

July 26, forty-third day.—Left this morning at 5½ o'clock, and marched fourteen miles to the tanks of Connedos Alamo, which were reached at 9½ o'clock. The road was very firm and hard, composed of gravel packed very closely, as was the road yesterday. Rattlesnakes and dog towns again appear in great numbers. Road to-day is rather more hilly than yesterday; mountains appear on all sides; course to this camp from Ojo del Cuerpo is west. The mountain here is nothing more than a mass of gigantic granite rocks, piled upon each other in every imaginable way. Water issues from the rock in several places. Outside of the mountain, several wells have been dug by California parties. These wells were full when we passed. Inside the mountain, in a cavern, there is a fine large well of pure water; this is full to overflowing; the water is very cold and of good flavor. Besides these places, there is a large tank of water on the western side of the mountain. Grazing here is very good, and plenty of wood to be had.

July 27, forty-fourth day.—Marched to day nine miles to Ojo del Alamo. The road is firm and good, leading through the hills. Wood is very scarce, and grazing along the road only tolerable. The water here is high up the mountain side, and is found in several tanks or wells, and is quite difficult to get at, on account of the steepness of the mountain. The wagons could not get nearer than four or five hundred yards. Wood is not to be had here at all, scarcely even brush. Saw to-day the Organ mountains, and Robbro and Sierra Colorado; they bear from this camp north 80° west, and west.

July 28, *forty-fifth day.*—Marched to-day nineteen miles to the Waco mountain. The road was over rolling prairie, having high mountains on the right and left some distance from us. The water here is pure and good, and in great abundance; but it is very difficult of access, as it is in tanks high up the rocky side of the mountain, so that animals cannot get at it, nor can it be brought down to them in buckets. The road to this point is very good; the grazing along the road was also good; but there is no wood at all to be had. This mountain is composed of immense masses of granite, with very little earth to cover the rocks. In its immediate vicinity a few stunted trees may be found. Leaving this place, we passed through the sierra by a road leading mostly over the dry bed of a mountain torrent, now and then crossing ridges. The rocks rose perpendicularly on each side, and were bare and stratified, so as to have the appearance of regular courses and layers. Some of this rock was of blue limestone; others resembled granite. This very rough road lasted for six miles, at the end of which we reached the Waco tanks, and encamped. The tanks are situated in caves of large masses of granite rock. There are several of these tanks containing immense quantities of pure cold water. Grazing at this camp is good, and plenty of fuel is to be had. The tank at which we stopped is on the right of the road. There are others on the western side of the mountains.

July 29, *forty-sixth day.*—To-day we arrived at the Rio Grande, opposite Isleta, after a march of twenty-two miles. The road for the first two or three miles is rolling, and accompanied by spurs of the mountain. We left the direct road to El Paso about three miles from the Waco tanks, as the guide reported it impossible to obtain subsistence for animals opposite El Paso. The road till within five miles of the river was of the deepest and most fatiguing sand. The country through which we passed was extremely barren; scarcely any vegetation, except a very little brushwood. Near the river, limestone appears; but still there is no more vegetation. On arriving at the river, the scene changes entirely. There is fine grazing in the bottom, and plenty of large cottonwood timber, besides large cornfields, orchards, and vineyards. Encamped on the island, about one mile from the village of Isleta.

In conclusion, I have to remark that the country from Fredericksburg to El Paso del Norte, by the route which I have travelled, presents no obstructions to the easy passage of wagons. Grass and water may be had every day, within marches of twenty-five miles, except from the head of the Concho to the Pecos—a distance of sixty-eight miles, which is entirely without permanent water at present. The character of the country is such, however, as to leave no doubt of the success of attempts to find water by means of wells, sunk at proper intervals. The soil, in many places, is soft and moist, giving promise of water at slight depths. The remainder of the road is sufficiently well watered. In passing through the Guadalupe mountains, we encountered two places which might be much improved by a working party, and one place in the Waco mountains—though, as they stand, they may be passed without much danger.

After leaving Kickapoo creek, and until arriving at the Concho, it would be well for parties taking this route to keep further to the north than we did, and thus avoid some of the spurs of the mountains lying on the south of Concho river.

The route from Fredericksburg to El Paso might be shorted in several places, so as to lessen the distance at least fifty miles—in one place, from Fredericksburg to the San Saba; one between San Saba and Brady's creek; and another between the Pecos and the Guadalupe mountains. To effect this diminution of distance would require a well to be sunk at each of three places between the spots mentioned.

I have the honor to be, very respectfully, your obedient servant,

FRANCIS T. BRYAN,
Brevet 1st Lieut. Topographical Engineers.

Lieut. Col. J. E. Johnston,
Topographical Engineers.

Account of distances from San Antonio de Bexar to El Paso del Norte.

		Miles.
From San Antonio to 1st camp		14.34
	Salado water	3.14
	Misenbergs	4.11
2d camp,	Post Oak springs	7.50
	Spring creek	4.40
	Sabinal creek	2.85
	Wasp creek	3.12
	Guadalupe river	4.60
3d camp,	Sisters creek	0.34
4th camp,	Grape creek	13.22
	Piedernales	7.00
5th camp,	Fredericksburg (camp)	5.05
6th camp,	Banon creek	8.22
7th camp,	Theudgills creek	15.14
8th camp,	On Llano river	15.28
	Comanche creek	8.65
9th camp,	Head of Honey creek	9.54
10th camp,	North bank of San Saba	11.11
11th camp,	Head of Camp creek	4.85
12th camp,	South branch Brady's creek	14.27
13th camp,	On Brady's creek	15.18
	Head of Brady's creek	7.50
14th camp,	Kickapoo creek	13.73
15th camp,	Lipan creek	11.60
16th camp,	Antelope creek	11.20
	South Concho	4.12
17th camp,	Dove creek	9.02
	Good Spring creek	3.43
	Lipan Camp creek	5.35
	Green mounds	5.70

18th camp,	Concho, or Blue river - -	7.02
19th camp,	On Concho - - -	2.85
	Crossing of Concho - -	8.81
	Dry ravine - - -	5.70
20th camp,	On Concho - - -	1.51
	Kioway creek - - -	2.60
21st camp,	Head-springs of Concho -	8.22
	Water holes - - -	8.80
22d camp,	Flat Rock ponds - -	11.69
23d camp,	Wild China ponds -	21.85
	Castle mountain - -	12.94
24th camp,	East bank of Pecos - -	13.00
25th camp,	West bank of Pecos - -	0.00
26th camp,	On Pecos - - -	19.31
	Falls of Pecos - - -	12.98
27th camp,	On Pecos - - -	9.96
28th camp,	On Pecos - - -	16.25
29th camp,	On Pecos - - -	22.08
30th camp,	On Pecos - - -	16.02
31st camp,	On Pecos - - -	14.42
32d camp,	On Delaware creek - -	16.05
33d camp,	On Delaware creek - -	23.50
34th camp,	Independence spring - -	16.53
35th camp,	Guadalupe spring - -	5.54
36th camp,	Ojo del Cuerpo - - -	28.21
37th camp,	On prairie - - -	14.85
38th camp,	Tanks of Connedos del Alamo -	13.30
39th camp,	Ojo del Alamo - - -	9.14
	Waco mountains - -	19.05
40th camp,	Waco tanks - - -	6.42
41st camp,	Rio Grande at Isleta - -	21.54
Total distance from San Antonio de Bexar to 41st camp	-	638.02

Headquarters Eighth Department,
San Antonio, June 9, 1849.

Sir: You will proceed to make a reconnaissance of the route hence, *via* Fredericksburg, to El Paso del Norte—the same lately passed over by Major Neighbors, Indian agent.

The object of this reconnaissance being to obtain, with perfect accuracy, the best information in reference to a permanent military road from the Gulf of Mexico to El Paso, you are desired to be particular in your examinations and observations, and will make a detailed report accordingly, in order that a comparison may be drawn between this and the route recently explored by Lieutenants Whiting and Smith, having in view the same object.

After your arrival at El Paso, you will report to Lieut. Col. Johnston, chief of your corps.

I am, very respectfully, your obedient servant,

GEO. DEAS,
Assistant Adjutant General.

Lieutenant BRYAN,
Topographical Engineers.

SAN ANTONIO, *December* 28, 1849.

GENERAL: I have the honor to report that, in the beginning of June last, I was ordered by Brigadier General Harney, then commanding this department, to organize two topographical parties for service between this point and El Paso del Norte—one, to which I was directed to attach myself, "to direct the march of the third infantry to El Paso," by the route discovered by Lieutenants Whiting and Smith—the other, to examine that just reported by Major Neighbors. Lieutenant Bryan was detailed for the latter duty, and directed to join for it a party of twenty-five or thirty men, mounted and armed. The instructions given by me, to govern him until we should meet on the Rio Grande, were superseded by others issued from department headquarters after I left San Antonio. Lieutenant Smith, the senior subaltern, was attached to the other party, on account of his knowledge of the other route. R. A. Howard, esq., surveyor, myself, and about twenty laborers, required to make a practicable road for our provision wagons, with Captain King's company first infantry as escort, made up the party. Captain King was directed, in orders received on the way from department headquarters, to escort Captain French's party from El Paso.

Lieutenant Bryan set out from San Antonio on the 14th June, and reaahed the Rio Grande, near El Paso, on the 29th July. His route is delineated on the accompanying sketch. His very favorable report is appended. He remained near the post at Doña Ana until I reached El Paso, when he reported to me.

The other party commenced the duty assigned it on the 13th June, at the point where Wool's road crosses the Rio Frio, and did not complete it until the 8th September, though assisted the greater part of the way by a large working party detailed from the battalion of infantry by Major Van Horne. The road is generally excellent, with abundance of grass and fuel. The itinerary appended will show what the supply of water is. For a minute description of the route, I respectfully refer you to the report of Lieutenant W. F. Smith, herewith submitted. The road marked out for the battalion of the third infantry deviates little (in but two places) from the prescribed route—in both cases, to avoid labor and delay, time being very important to the troops, who had their arrangements for winter to make after reaching their destination. This consideration justified me, I thought, in departing from the letter of my orders. The first deviation is between the lower ford of the San Pedro and the Pecos; the other in approaching the Rio Grande, avoiding several rugged mountain passes, by keeping outside of the mountains near the river, and below the Eagle mountain.

While recruiting the teams for the return march, the valley was surveyed, from the lower end of the island, below El Paso, to Doña Ana, by Lieutenant Bryan, Mr. Howard, and myself; while a reconnaissance was made by Lieutenant Smith, to ascertain if there is an available pass in the Sacramento mountains. His report is among the accompanying papers.

On the 11th of October, the party of twenty-five men, besides two Delaware Indians, engaged as guides, set out on the return march. In order to examine the country between the Rio Grande and the heads of the Colorado and Brazos, I took the northern route; but, in the middle of October, the winter set in with such severity, that I thought the lives of our mules depended on turning southward. The men, also, were equipped for summer. Therefore, instead of crossing the Pecos, we marched down it to the southern road, which was followed to San Antonio, where the party arrived on the 23d of November.

Mr. Howard and myself, with ten men, turned eastwardly from the head of the San Pedro, hoping to find a direct practicable route from that point to Wool's road about Vandenburg, both to shorten the distance and avoid the rough and uncertain road along the San Pedro. We found the country between that river and the western branches of the Nueces (about sixty miles) quite destitute of water; otherwise, practicable.

The distance to El Paso by the southern route is six hundred and seventy-three, by the northern six hundred and forty-six miles. The first distance might be diminished fifteen or twenty miles by the labor of twenty men, fifteen or twenty days, between the San Pedro and the Pecos. The other might be shortened as much, or more, by the labor of a small working party on the Guadalupe mountain for a few days, and by requiring the officer who commands the first train to straighten the road by cutting off the unnecessary curves, which now increase every day's march by two or three miles. Another improvement would be, to follow the eastern bank of the Pecos, instead of the western.

By referring to the accompanying sketch, you will see that both the routes now used very far exceed the direct distance to El Paso. It is so important to diminish, as much as possible, the present enormous cost of transporting supplies to the posts on and near the upper Rio Grande, that I strongly recommend the employment, as soon as the spring commences, of some of the disposable topographical officers in the department in the examination of the Rio Grande above Eagle pass, and in exploring the southern portion of the country between the Pecos and Rio Grande, in order to continue the road in a westerly direction from the head of the San Felipe, or the lower ford of the San Pedro. Besides the probability of materially shortening the distance, this change offers the further advantages of connecting with the navigation of the river, should it be found available; forming a means of communication from point to point along the frontier, which will very soon be required; and promoting the settlement of the valley of the Rio Grande, the most extensive tract fit for settlement west of the San Pedro.

The two positions occupied by the third infantry, near El Paso, are in a direct line—one nineteen, and the other thirty-seven miles south of the point at which the thirty-second parallel crosses the Rio Grande. Any mounted force stationed in that vicinity, to prevent incursions of the Indians into Mexico, should be so placed, I respectfully suggest, as to be able to operate readily on either side of the river, and therefore above the southern boundary of New Mexico.

We crossed many Indian trails leading into Mexico—only two, however, which seem to be very much used. One, crossing the Pecos at the Horse-head crossing, and the southern road at the Comanche spring, leads to the Rio Grande, about eighty miles below Presidio del Norte. The other, touching the heads of the western branches of the Nueces, crosses the southern road at the head of the Las Moras.

As you have done me the honor to ask what, in my opinion, are the best arms for mounted troops on this frontier, I strongly recommend those, modified, with which the men who accompanied me were equipped—the rifle for use on foot and at a distance, and the revolver for close fight. A steel rifle, of the length and weight of the cavalry carbine, and made with the skill to which American gunsmiths have attained, will have a range of four or five hundred yards. With the picket bullet, Colt's five-chambered revolver, made for the round bullet, shoots with more force and accuracy than any other pistol, and, worn at the belt, is less cumbrous than the sabre; while the repeating principle makes it more effective in Indian warfare than the cavalry pistol and sabre. The pistols furnished to the government by Mr. Colt are inferior, in every respect, to what the Texans call "fine shooters." To admit the picket bullet, the cylinders are necessarily so long as to give inconvenient weight and destroy the balance of the weapon; and the round ball is thrown by the same pistol with much the most force and accuracy. I therefore suggest a return to the old pattern.

Most respectfully, your obedient servant,
J. E. JOHNSTON,
Capt. Top. Eng., Lt. Col. U. S. A.

Major GENERAL BROOKE,
Commanding 8th Department.

List of encamping places on the southern route from San Antonio to El Paso, with distances.

Castroville	25.42
Quihi	10.00
Vandenburg	7.17
Hondo	3.80
Rio Seco	8.98
Ranchero creek	8.38
Sabinal	3.94
Comanche creek	5.37
Rio Frio	8.50
Head of Leona	7.06
Nueces	9.04
Turkey creek	10.37
Elm creek	15.23
Las Moras	7.13
Zoquite	7.46
Maverick's creek*	9.02

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* A creek about midway.

Pedro	2.50
Spring	1.31
San Felipe	8.98
San Pedro	10.25
Springs	19.02
Second ford of San Pedro	18.64
Head of San Pedro	22.51
Howard spring[*]	41.21
Live Oak creek	32.40
Ferry of the Pecos	7.88
Along the Pecos	36.56
Escondido creek[†]	18.24
Head-spring	8.58
Comanche spring	19.47
Leon	9.57
Luripia[‡]	35.32
Along Luripia	25.89
Water-hole	13.74
Small stream[§]	15.59
Water-hole[‖]	6.00
Rain Water creek	17.82
Along Rain Water creek	10.77
Water-holes	8.00
Eagle spring	21.57
Rio Grande	32.42
Along Rio Grande[**]	55.00
San Elisiano[††]	5.00
Socorro	4.45
Isleta	3.10
Military post opposite El Paso	14.14
	672.70

San Antonio, Texas, *January* 28, 1850.

Sir: Orders, of which I submit the following copy, were received by me at the place and date set forth therein:

[Special Orders No. 50.] Headquarters Eighth Department,
San Antonio, September 11, 1849.

Agreeably to the recommendation contained in the letter of Brevet Lieutenant Colonel Johnston, chief topographical engineer within the eighth department, dated July 12, 1849, Lieutenant Michler, with his party, will proceed to the examination of the route from the upper valley of the south branch of Red river to the Rio Pecos. Should there be evidences of a serious hostility on the part of the Indians, likely to endanger the lives of the party, Lieutenant Michler will retrace his steps, and return to this place for further instructions.

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[*] Rain water generally to be found between the last two places.
[†] Water frequently runs four or five miles nearer the Pecos.
[‡] This is the first running water, which is sometimes found five or six miles nearer.
[§] Sinks above the direct road.
[‖] More than two miles to a spring in the foot of the mountain.
[**] Crossing to the island below El Paso.
[††] Military post.

By order of Brevet Major General Brooke:

GEO. DEAS,
Assistant Adjutant General.

Having proceeded to execute the above instructions, I have now the honor to report their completion, and respectfully furnish the following report of my reconnaissance, together with the accompanying map:

Upon leaving San Antonio, my escort consisted of fourteen men—all civilians. I decided upon taking wagons along, as far as possible, as they would afford the best test of the practicability of a road. The nearest post to the point at which my examination was to commence is Fort Washita, in the Indian territory. Apart from the fact of its being a good starting-point from which to commence the survey, it possessed the advantages of enabling me to renew my supplies of provisions, and of refitting out my expedition with animals, or whatever might be needed, before finally getting beyond the reach of the settlements. In consideration of these circumstances, I proceeded first to Fort Washita—the distance being about three hundred and eighty miles. The road travelled was upon the extreme line of settlements, although within the present line of military posts. For the first hundred miles, the country has become pretty well settled; for the rest of the way, farms were only met with at intervals of ten and fifteen miles. With but few exceptions, the road was an excellent one throughout; the country was generally a fine grazing one, and well watered, fine bold streams being crossed at short distances. With the exception of post oak and one or two other varieties of oak, no timber was to be met with, except immediately upon the banks of streams. The principal, and I might say the only, produce of the farms is corn; the demand being limited, there is but a small supply,—each farmer raising merely sufficient for his own use and for the few passing travellers. Upon approaching Red river, some few fields of cotton were seen. The villages along the road are mostly small, containing perhaps some half dozen dwellings—the latter but poor and indifferent. Even the most trivial comforts are unknown to a greater portion of them. Within a few miles of Red river, more signs of industry and ease are visible, and you seem transported in a new land. Beyond this last river, among the Chickasaws, you meet with some fine farms, and in all a degree of comfort which does credit to them.

In consequence of some heavy rains, a few slight detentions occurred; but we at length reached Fort Washita in safety. I was here detained for several days, after renewing my outfit, by a rise in the False Washita. Constant rumors of Indian hostilities reaching me, I here increased my party, which now numbered twenty-one men. With this escort, and with four wagons, loaded with provisions for two months and a half, I was in readiness for a start.

To Captain Marcy, fifth infantry, who had arrived at Washita but two days previous to my setting out, I am indebted for information concerning the country passed over by him, knowing that the route to be pursued by me would, sooner or later, intersect his. He had come from the Pecos, but had kept south of the Red river until he reached Preston. I attempted to obtain the services of his valuable guide, Black Beaver, a Delaware, but failed, as he had so recently returned from off a long expedition. I consequently had to proceed without a guide. The courses and distances from Fort Washita to the Pecos were actually taken, and will be found in the notes of the survey.

The Washita river having fallen, we proceeded to cross it—the entire day being occupied in accomplishing the crossing of the wagons. To be better able to impart correct ideas of the country traversed, I shall extract parts from my journal of each day's march:

November 9, 1849.—This morning, started from Fort Washita. The first two miles was through the Washita bottom; the soil rich, red clay mixed with sand, being excellent cotton land; the timber cottonwood, hickory, dogwood, elm, sycamore, and post oak. The road lay partly on a post-oak ridge, dry, and of a hard, sandy nature. The Washita river, when I reached it, was still high, although fordable on horseback. When low even, it is difficult to cross, in consequence of the existence of quicksands in the bed of the river. This stream is about three hundred miles in length, varying in breadth constantly, and about forty yards wide at the ford. It is frequently the cause of the great rise in the Red river. The water is of a bright vermilion color, and its taste brackish. They speak of erecting a bridge across it; the banks are high and favorable for accomplishing it. On the west side, the bottom land is about half a mile in width, very dense and thick, and of the same nature. The road then passes over a slightly-rolling prairie until it reaches the Lower Cross Timbers. To the left are seen the low hills along the Red river; and to the right one continuous prairie, with here and there mots of post oak. Several small creeks were passed; the country seemingly well watered; the timber growing very thick along them. The soil was of a sandy nature throughout the entire distance. The prairie grass was already very dry at this season, the species of gramma being most abundant; here and there spots of mezquite. Saw several varieties of cactus to-day. At the edge of the Cross Timbers, we found an unusual formation for this country: upon the slopes of the prairie lay large rocks, all of them sharp and of a slab-like form, set in the ground at angles, edges upright, and all highly fossiliferous, but no common direction given them. The distance from the Washita river to the edge of the Cross Timbers is about nineteen miles. Encamped on Sandy creek.

November 10 *to November* 16.—The road for the next eight miles still continued in the Lower Cross Timbers. This body of timber commences as far south as the Brazos, and crosses the country in a northeast direction. To pass through it, we were compelled to follow old Indian trails, cutting our way wherever the wagons could not pass. Its breadth, by the road, was ten miles. The timber generally grows pretty thick, and upon a sandy soil. Post oak, white oak, Spanish oak, black-jack, and other varieties of oak, together with elm, black and white hickory, form the principal growth of the Cross Timbers. The country is rolling throughout their extent. Many small creeks traverse them, and fine walnut and sycamore grow upon their banks, and often cedar is found along them. The road laid down on the map as the "Oil Spring road" leads to a spring which its name implies; the oil is said to resemble naptha, and patients already resort to it for its beneficial effects. The country near the edge of the Cross Timbers became more rolling; and from the highest points the Red river could be easily seen. The Lower are separated from the Upper Cross Timbers by a high rolling prairie fifteen miles in breadth, by our course. This prairie is open and entirely destitute of timber; the soil is rich until you again reach the Cross Timbers, when it becomes loose sand. The upper are vastly inferior to the lower, both in kind and quality of timber; the former are composed of nothing but scrubby post oak.

In breadth they are fifteen miles, the main body extending west as far as Mud creek. The banks of the streams traversing them are generally of loose sand, and it is difficult for wagons to cross them; at almost every one of them we were compelled to double teams, and cut away the banks, in order to cross them. The water is generally fresh, with the exception of Salt creek. They are subject to frequent and sudden risings, but soon run out. Upon the banks of one of them we were detained an entire day, in consequence of a heavy rain on the night of the 9th. At Walnut bayou, left the road to Warren's trading-post, and followed an old Indian trail to the mouth of Mud creek. The trading-house was broken up a year or two ago, and two or three old Cherokees alone remain at the spot. We have passed several Indian villages, principally belonging to the Caddo and Bilusi tribes; they have settled down to raising corn, and with their cows and poulty seem quite domesticated. After cutting our road through the Upper Cross Timbers, we reached the Red river, and on the evening of the 15th encamped on its banks, within half a mile of the mouth of Mud creek, and distant sixty-one miles from Fort Washita. The banks of the river were low. The water was falling rapidly; and, from the extent of drift, there must have been a severe freshet. Unable to tell the natural bed of the river. There was some fine large and heavy timber upon the bank of the river—hackberry, mulberry, cottonwood, Spanish oak, black-jack, and willow forming the principal growth. The grazing near the river is, however, extremely bad.

November 16 *to November* 23.—Upon examination of Mud creek, we found that it was impossible to be passed, except by bridging it, or by rafting. The banks are steep bluffs, and the bed of the stream exceedingly boggy, although not deep. It seems to be back-water from Red river, and, from its appearance and quality, well deserves the name which it bears. The water is brackish, consisting of clay and water. The timber on it was scarce, and of the same kind as on the main river. In order to be passable at all times, it must be bridged. As the river was constantly falling, we found that, by means of a large sand bar extending above and below the mouth of the creek, we could at length be able to pass in that manner; fords were found from the sand bar to the shore at both extremities. By thus keeping up the middle of the river on the bar, we managed to get beyond Mud creek, after a day's tedious work. In making the trail, we very nearly lost two of our mules in the quicksands. The road lay just over a flat prairie for several miles, the river remaining in sight; it then passed over a high rolling prairie, the divide between the Red river and Mud creek—both streams being in view, and running parallel to each other. Within ten miles of again touching the river, the country becomes a perfect dead level. Encamped on the evening of the 22d, on the south side of Red river, two miles above the mouth of the Little Wichita, and one hundred and four miles from Fort Washita. Passed two beautiful streams of clear running water, together with several smaller ones, since leaving Mud creek. To the north of us, we could still see traces of the Upper Cross Timbers, but no timber immediately along the road, excepting in small mots and along the streams. In crossing the latter we always found good fords, being led to them most generally by Indian trails. The further west we travelled, the better grazing we found—the gramma, sedge, and buffalo grass the most abundant, but the mezquite constantly becoming more frequent. By the time we reached this point of Red river, having satisfied myself of its position with respect to the two Wichitas by examinations up and down the river, I found that the water had considerably fallen, and was now at a fordable depth. After remaining upon its north bank one day to recruit my animals and to seek a ford, a second day was occupied in crossing it. The same difficulty arose from quicksands as before; and it was only by dividing up the loads into several, and crossing portions at a time, that we could get across. At this point there seem to have been several bottoms—descending high bluff banks from the first to the second, and each successive one a few feet lower than the preceding. In leaving the channel of the river, you first come upon a sand flat, the bed of the river in high water, with nothing upon it but large quantities of drift; then the first bottom land of the river, containing rich alluvial soil, sand mixed with red clay, and timbered along the edge near the flat with young cottonwood and willow. This bottom bears evidence of being frequently overflowed. Then comes the second, separated from the first generally by a steep bluff bank, the latter intersected by gullies and ravines, impassable at most places for wagons. High sand hills are found on the edge of this bottom. At the foot of the bluffs are fine springs and lakes, well timbered, and good grass along them. This bottom is also subject to overflows. The river was then rapidly falling from a high freshet; but, notwithstanding, it was filled with sand bars, and but small and narrow channels for the water to pass. At the ford, the breadth of the first bottom from bluff to bluff was about a mile and a half; that of the river bed, at any ordinary rise of the water, a half a mile; and that of the regular channel, about a hundred yards—the depth of the water about two feet and a half: at most points the channel was much narrower, but too deep for a ford. It was impossible to cross immediately at the mouth of the Little Wichita. Thus far the country has been well adapted to a road. The Cross Timbers, and large bends in the river, have caused our route to be somewhat tortuous; but with time, and a small working party, a perfectly straight road could be made. It has been watered at convenient points—the water mostly fresh, with the exception of Red river, which is a brackish red stream.

My instructions, as stated in the letter of recommendation referred to, were to commence the examination at the mouth of the Little Wichita; and at this point I had now arrived.

November 23 to December 4.—On the morning of the 23d of November, we left the Red river—a most uninteresting one to the gaze, presenting nothing pleasing to look upon. On the evening of December 4, encamped upon the main fork of the Brazos: the distance from the former to the latter, about ninety six miles. The route for this entire distance lay upon the divide between the Big and Little Wichita, with the exception of the last ten miles, which crossed the divide between the Wichitas and the

Brazos. It passes over a slightly-rolling prairie, with intervals for miles of perfect dead-level flats. A more beautiful country for roads of any kind cannot be found. Near the Red river the soil is slightly sandy, and you meet with some few post-oak mots. It then becomes a fine mezquite country, well timbered with mezquite, and for miles perfectly level; and even when a rolling prairie, the elevations and depressions are small. The grass at first is principally gramma, and the ordinary sedge, and their species; but then come the fine early mezquite and the winter mezquite. The whole extent was well watered by numerous branches of the two Wichitas. The country appeared to have been flooded by previous heavy rains, and numerous water-holes were met at short intervals. Most of the streams possessed a slightly brackish taste: all of them were well timbered.

The Big Wichita, I have been informed, rises in the old Wichita mountains. It is much larger and rises much further west than any of the other branches of Red river. Upon leaving the divide and approaching it, the ground is exceedingly rough and uneven: deep gullies had been washed through the clay and sand, and numerous small mounds had been formed by the swift currents during the high freshets to which this stream must be subject. From the amount of drift scattered about, it must rise to a very great height, and its currents become remarkably swift. On this side the banks were high sand bluffs, but on the opposite side they were much lower, and a gradual descent to the edge of the water. Its breadth is about thirty yards, and depth only a few feet, with no very strong current. The water is of the same color as that of Red river, and tasted very brackish and bitter; young cottonwood seems to be the only timber which grows along it. Within a few yards of its banks you find many lakes or ponds, the water of which is much more agreeable to the taste. The Indian name for this stream is "Ah-he-we-wo-nah:" translated into English, it signifies "Pond creek."

The Little Wichita heads within six miles of the waters of the main fork of the Brazos—the Trinity heading up against both of these streams, and but a few miles from both. The divide between the two Wichitas is also very narrow at the same point, the two being separated from each other by about eight miles. The first stream is about one hundred and twenty-five or thirty miles in length; its breadth, at different points at which I saw it, varied from ten to fifteen yards; its depth was but a few feet, and its bottom very boggy. The bottom land is about one hundred yards in width, and heavily timbered with elm, hackberry, and cottonwood. A strip of land, about a mile in width, along this stream, presents a peculiar appearance, and has been subject to some powerful influence: deep gullies, low ridges, innumerable small mounds, and hillocks of every conceivable shape, thrown together without order or arrangement, present to the eye quite a contrast to the central portion of the divide. The soil is here a reddish sandy clay. Limestone is found lying about, and the ground is covered with gravel. The whole is the result of heavy rains, and the freshets which have been occasioned by them. They all can be avoided by continuing upon the divide. The distance is thus slightly increased, but the road would be almost perfectly level, and no labor would be required. The clearness of the waters of the Little Wichita forms a striking contrast to those of the lower Wichita; it is a clear running stream, although the water tasted very slightly brackish. Almost the entire distance from the Red river, the two Wichitas were constantly in sight, and could easily be traced by the lines of timber along them.

Crossing the divide of the Brazos, you travel over a continuation of the mezquite range, and come across the Brazos without the slightest indication of its presence. No timber along its banks as far as the eye can see: you stumble upon it without any forewarning. High bluff banks along its very edge conceal it until you reach the top of them. Its channel is about fifty yards in width, and bounded but by a small strip of bottom land. We easily found a ford, which we were enabled to cross without labor, its depth being about two feet. Owing to its red sandy bottom, the waters have a reddish appearance, though clear, and free from mud. The Indians call this stream the Colorado, and much more deservedly than the one bearing that name on the map of Texas. The water is exceedingly brackish. Small streams of fresh water are found emptying into it, which will serve every purpose. In the bottom was good grazing of sedge and water grass, and on top of the bluffs again spread out the mezquite flats. Near the Red river the formation seemed to be sandstone, but on the Brazos we found some beautiful limestone. The bluffs were white with the large limestone rocks that lay strown on their surface. Lay by on the 3d to recruit my mules. Since leaving Red river we have met with several tribes of Indians—Shawnees, Delawares, Tongues, &c. The Comanches and Tongues were united in chasing the buffalo above the Big Wichita; they allowed us to pass unmolested. During the last few days of November we had some extremely cold weather, and our animals suffered severely; the grass became deadened by frosts, and contained but little nourishment.

December 4 *to December* 16.—On rising the bluffs of the main fork of the Brazos, we again found a continuation of the mezquite flats, over which we travelled until we reached the head of the Double Mountain fork of the Brazos. Day after day the country was almost perfectly level: one exception alone can be made, a distance of four or five miles, over some high sand hills, perfectly destitute of grass, and covered with low scrub oak; the rest was either mezquite flats or a very slightly rolling mezquite country—the distance from the Brazos, one hundred and eighteen miles. The whole country was well watered by branches of the Double Mountain fork and the Clear fork of the Brazos: the only distance without water of any length was twenty miles. There was but little timber upon these streams upon first leaving the main fork; but the further we advanced the more we found—elm being the principal growth. The whole country was well timbered with mezquite, but most of it had been killed by prairie fires. The general course of the Double Mountain fork is northeast, both this stream and the main fork running very nearly parallel. As its waters are fresh, and leading at the same time near the waters of the Colorado, it possesses much greater advantages than the main fork for the purposes of travel. It is a fine clear stream, although of no great width; at many places it runs with a swift current, although frequently standing in large holes or lakes, and in these places exceedingly deep. It has a gravel bottom, and in a few places a hard limestone bottom. The banks are generally high, the prairie extending to the edge of them. At a distance of forty-five miles from the Brazos we first struck Captain Marcy's trail, and then commenced following it. About seventy miles from the Brazos, the country, which had hitherto been very mountainous, began to assume some new features; high mounds and low ridges of hills came in sight, and presented a new scene. The road, however, left them mostly to our right, and they continued to extend to the head of the Double Mountain fork. They offer not the slightest objection to the road, our wagons passing along without any trouble or work. They are low, and scarcely bear the name of a hill, except in comparison with the level country about them: they are a succession of spurs or oblong mounds, overlapping each other, separated by deep ravines and gullies. Upon ascending them, you see some distance in advance of you two high peaks, forming prominent landmarks, and near the head of the Double Mountain fork, from which this fork derives its name. They continue constantly in sight, and your course is directed towards them. Limestone abounds upon these hills. The live oak and cedar first are seen upon them. A second range, parallel to the first, is seen at some distance further off. A low country intervenes between them, and appears to be the basin of the main fork. During this interval of time, we suffered most severely from cold northers, heavy rains, and terrible sleets. Our mules had already become very weak, in consequence of living upon grass alone—the latter having lost most of its nourishment from the killing frosts which night after night lay upon the ground. The cold affected the rest; and nine of our animals were either frozen to death or left so stiff with cold as to be unable to be moved. Our loss would have been greater had not the men divided their blankets with their animals, and built immense fires, to protect them as much as possible from the cold. We found it necessary to change the party from mounted men to foot men, and replace the wagon mules by saddle mules. The commencement of the winter setting in so severely, we knew not what might come to pass ere we returned to the settlements.

December 16 *to December* 23.—Upon leaving the head of the Double Mountain fork, we commenced crossing the divide separating the waters of the Brazos from those of the Colorado—a distance of about eight miles. The country here undergoes a complete change. You now meet with high rolling praries, arid, and destitute of timber, and scarcely any grass but of the most miserable kind. Occasionally you cross low sand hills, containing some low cedar and scrubby oak. This country extends to the "Big springs of Colorado," these latter distant from the head of the Double Mountain fork about fifty-six miles. Several fine branches of the Colorado were crossed, the largest of which was the Salt fork. With the exception of the latter, they were all streams of fresh water; their banks were high, but they were all of no great width. On the 21st, we encamped at the "Big springs of the Colorado," and remained there the following day to rest our animals. These springs are very large, and a considerable quantity of water is obtained from them; they cover a space of about twenty feet square, and in some places the water is fifteen feet in depth by measurement. They are walled in by a ledge of high rocks, forming a concave surface, within which the basin of the springs lies. The water is impregnated with lime, and is cool, fresh, and perfectly clear. It is carried away in a bold, running stream, which in a short distance sinks below the surface. The rocks which line the waters are a conglomerate limestone, formed by numerous shells, united by a natural cement, the character of which is silicious. The surface of the ground around it is covered with angular pieces of limestone. High mounds and hills surround the springs. The soil is chiefly sand; the grass is poor;

no timber but young mezquite and cedar; some scrubby elm borders the stream. This spot has been a favorite place for the camping-grounds of Indians; numerous large, well-beaten trails lead from it in different directions.

December 23 *to December* 31.—On the morning of the 23d, we left the "Big springs." Our road now lay over a high arid plain, perfectly destitute of timber—scarcely even a sprig of mezquite, except in the neighborhood of water-holes. For miles, the country would be a perfect level, and then a slightly-rolling prairie; it seemed destitute of all growth of any kind, and nothing to be seen upon it excepting the antelope and wolf and prairie dog town. The grass was scattering, and miserably poor; occasionally a small spot of mezquite was found. This continued until the commencement of the low sand hills, a distance from the "Big springs" of about seventy-six miles. At the distance of twenty-one miles were the "Mustang springs." There was nothing to indicate their presence; a few scattering chaparral bushes were growing within half a mile of them, but in proximity to the water were no trees or bushes of any kind. A low prairie of about a hundred acres in extent, in form very nearly circular, and bounded by low bluffs, composed principally of white limestone, contains several small ponds of water—one or two pretty deep, and the rest not containing much water. The taste of the water is flat and sweet, being slightly brackish. From the number of trails leading to them, and the number of mustangs which came to water there, and the quantity of flag and other vegetable matter growing in and about them, I judge the water to be permanent. Several springs were found bubbling up in the ponds. Upon reaching the sand hills, we found, for the first twelve miles, low ridges of sand, running parallel to each other, plains of the same kind interspersed between them, with small hillocks. The sand was here of a black color. Then come the white sand hills, which are really an object of curiosity. They are a perfect miniature Alps of sand—the latter perfectly white and clean: in the midst of them you see summit after summit spreading out in every direction, not a sign of vegetation upon them—nothing but sand piled upon sand. They form a belt two or three miles in width, and extend many miles in a northwest direction. But a matter of the greatest surprise is to find large water-holes among them: they are found at the base of the hills, are large, deep, and contain most excellent water, cool, clear, and pleasant. The water is permanent. A great deal of vegetable matter and young willow trees are found on their banks. This was the first water we found since leaving the "Mustang springs"—a distance of sixty-seven miles without any: during this entire distance we saw no indications of any whatever. Instead of going above the sand hills, we crossed them, following a large Indian trail over them; and then, taking up our course, we reached the Pecos in twenty-two miles. The first two miles was over the sand hills; and a difficult undertaking it was to cross our wagons. The country was then a slightly-rolling prairie, a hard, sandy soil. A thick growth of chaparral extended from the sand hills to the bottom land of the Pecos. The grass was indifferent, and the soil poor and unproductive. A low ridge bounded the bottom land, the latter being about a mile wide where we struck the Pecos. The course of the stream was nearly east and west; its width was about forty feet; and, being too deep to ford, we encamped on its left bank. It answered well the description given me by others, and was truly a "rolling mass of red mud"—nothing to indicate its presence but a line of high reeds growing upon its banks. Along its banks you find numerous lakes, the water of which is clear, but still more brackish than even that of the river. On December 30, we reached the Pecos, the point at which our reconnaissance was to end—a distance of four hundred and ninety-two miles from Fort Washita. From this examination we may conclude that, for the distance passed over, a more advantageous country for roads of any kind cannot be found—for hundreds of miles almost a perfect level, well watered the greater portion, and well timbered. It stands unrivalled by any other portion of Texas that I have seen. The sand hills, and the scarcity of wood and water, from the "Big springs" to the Pecos, form the only objection. We carried wagons with us throughout the entire distance, without the slightest difficulty. The grass is mostly the fine curly mezquite, the best for grazing purposes. No hills or mountains to form any obstacle, and no work to make a road required. The whole country is entirely different from what it was represented to be by persons who boasted of their knowledge of this part of Texas—showing that not the slightest reliance could be placed upon their statements.

December 31, 1849, *to January* 24, 1850.—As it was difficult to cross the Pecos, in order to strike the road to El Paso, I determined to continue down the left bank until I reached the Horse-head crossing, and then follow the road into San Antonio. Our route continued in the Pecos bottom, following the general course of the stream. The bottom was solid, and made a good road, and was perfectly straight. Low ridges bound the bottom until near the crossing—the width of the bottom varying, on this side of the Pecos, from a mile to only a few yards. At any stage of the weather, a good road can be found along the foot of the ridge. The distance from where we struck the Pecos to the Horse-head crossing was about forty miles. During the march down the Pecos we had a snow-storm, and we again lost two mules. In consequence of these losses we had been compelled to leave behind two of our wagons. By occasionally replacing the wagon mules by saddle mules, we still managed to get along pretty well. We travelled into San Antonio, for the greater distance, by the same route which Lieutenant Bryan pursued in going to El Paso. His report will be sufficient to give all the necessary information concerning it. From the Pecos to the head-springs of the Concho, a distance of sixty-eight miles, we found no water. Leaving the Concho at the point where he first struck it, we followed the emigrant road by the head of the San Saba. On leaving the Concho, the road ran over a high rolling country; the only peculiarities of it were the numerous mounds which were scattered on our right and left—generally of a spherical form, varying in size, and at unequal distances from each other, their sides covered with loose stone and low brush. The country was hilly, and large rocks lay strown about. The soil has been a hard gravel one; its only recommendation, that of making a good road. The first nineteen miles we found plenty of water; but for the next forty-five miles, until you reach the San Saba, there is none to be relied upon. On reaching the San Saba, we travelled down the valley of the stream for thirty-five miles. It is a beautiful mezquite valley, perfectly level, and varying in width from a mile to a few hundred yards, and surrounded by high bluffs.

On leaving the San Saba we crossed the divide separating it from the Llano. This portion of the country was much like that ere reaching the San Saba, but not quite so rugged. Descending from the divide, we followed the valley of Honey creek, one of the branches of the Llano, until we again came into Lieutenant Bryan's road, about sixteen miles from the crossing of the Llano. We then continued along it until we reached San Antonio. The distance from the Horse-head crossing, on the Pecos, to San Antonio, by this route, was three hundred and forty-six miles. We arrived at this place on the 20th of January, having travelled a distance since leaving it of nearly thirteen hundred miles.

Very respectfully, your obedient servant,

N. MICHLER, Jr.,
Brevet 2d Lieut. Top. Eng.

To Brevet Col. J. E. Johnston.

San Antonio, *April* 16, 1850.

Sir: I have the honor to transmit herewith a sketch of the river Colorado, from Austin to its mouth. Although the scale is not large enough to show distinctly the character of the channel, it is as large as the means of conveyance (the mail) will permit.

The examination of the river was made by Lieutenant W. F. Smith, assisted by Messrs. R. A. Howard and J. F. Minter.

There are three sorts of obstruction to the navigation of the Colorado. The (so called) raft, snags, and overhanging trees. The removal of these would make the river, in ordinary stages, practicable to Austin for boats drawing two feet water.

The raft occurs in eleven separate parts, the aggregate length of which is 3,569 yards. It is seven miles from the head of the first to the foot of the last portion, and eleven miles from the last point to the mouth of the river.

The expense of clearing this part of the channel is estimated at $30,000 by a person who was for several years engaged in the removal of the Red-river raft. The necessary machinery would cost, he thinks, $20,000 more.

Between the head of the raft and Bastrop there are fifty-four clusters of snags—the clusters, as well as the snags, generally small. Between Bastrop and Austin the channel is in three places choked with fallen trees; and in three other places large boulders occur, which should be removed.

Between Austin and Lagrange, large trees overhang the channel. The cost of their removal could not exceed $500.

To open the river to Austin, then, the cost would be about $56,000, viz:

To remove the raft - - - - - - - -	$50,000
" " snags - - - - - - -	5,000
" " trees and boulders - - - -	1,000
	$56,000

If machinery now owned by the United States could be used, $20,000 would of course be deducted from this estimate.

At a slight additional expense, the river might be made navigable throughout the year. There are nine shoals below Austin, in each of which the depth of water could be increased several inches by slight wing dams, except that near and above Columbus, where the object would be accomplished by excavating thirty or forty feet in soft soap stone.

The improvement of the Colorado would reduce the annual expense of transporting supplies in this department by at least $20,000.

Should the government remove the raft, the inhabitants of the valley of the Colorado would probably complete the opening of the river. More than $20,000 has been subscribed for that purpose.

Most respectfully, your obedient servant,

J. E. JOHNSTON.

Col. J. J. Abert,
Chief Corps Topographical Engineers.

Quartermaster General's Office,
Washington City, June 13, 1850.

Sir: I have the honor to enclose herewith a copy of the report of Captain S. G. French, Assistant Quartermaster, in relation to the road opened between San Antonio, Texas, and El Paso del Norte, required by a resolution of the Senate dated 8th instant.

I remain, sir, most respectfully, your obedient servant,

CHAS. THOMAS,
Lieut. Col., Q. M. in charge of the office.

Hon. Geo. W. Crawford,
Secretary of War, Washington, D. C.

Assistant Quartermaster's Office,
San Antonio, Texas, December 21, 1849.

A report in relation to the route over which the government train moved from San Antonio to El Paso del Norte, made in pursuance to orders received from Major E. B. Babbitt, A. Q. M. U. S. A., dated May 30, 1849.

S. G. FRENCH,
Captain and A. Q. M.

REPORT.

In February last, Lieutenant Whiting, of the Engineers, and Lieutenant W. F. Smith, Topographical Engineers, left San Antonio for Paso del Norte, to explore the country, and ascertain if it were possible to open a road for military and commercial purposes between the two places. During their absence, the train to transport the government stores and the property of a battalion of the 3d infantry to El Paso was got in readiness, and ordered to proceed by way of Fredericksburg; but, when on the eve of starting, the return of the engineers, and their favorable report, induced the general commanding to change the route, and directions were given for the expedition to proceed by way of the military station on the Leona.

Late in May the trains were started, and ordered to encamp on the Leona, and there await the arrival of the troops under order to move on the 1st of June. The day fixed for their departure proved exceedingly unfavorable; the rain fell in torrents, which, added to those that had fallen a few days previous, rendered the roads extremely bad. The command, however, moved on, and encamped for the night on the Leon creek. The following day a violent thunder-storm arose early in the morning, and the command remained in camp.

On the morning of the 3d they moved to the San Lucas springs; and, before the tents were pitched, again the rains began to fall. The prairies were now inundated—the roads so bad that it was with difficulty the company teams, overloaded as they were, could move.

On the morning of the 4th I left the troops encamped for the day, and moved on to Castroville, 25.42 miles from San Antonio. The road from San Antonio to Castroville runs through a generally level prairie, covered with a luxuriant growth of grass; the soil is good, and country well adapted to cultivation and grazing. The town is situated on the west bank of the Medina river, and contains about 500 inhabitants, mostly German emigrants. The place presents but few signs of improvement, and idleness and poverty are more visible than industry and wealth; houses are falling to decay, and the rich lands lie uncultivated.

The Medina is here a clear, bold, rapid stream, about 30 yards wide, flowing between banks that rise near 50 feet in height on either side. It empties into the San Antonio river about 12 miles below the town of San Antonio.

From Castroville the road leads over some gentle hills, and thence through a tract of land pretty well timbered, until it opens out into what is here known as a "hog-wallow" prairie. We found the road, owing to the rains, as bad as can well be imagined. Beyond this prairie is a slightly-elevated ridge, from the top of which, spread out before him, the traveller sees the beautiful valleys of the Quihi and the Hondo, pent in by the blue hills in the distance. The valley of the Quihi is sparsely covered with timber, principally mezquite and oak. The land is extremely rich, and affords at all seasons excellent grazing. In midsummer the stream ceases to flow, but the water at intervals collects in never-failing pools. The village of Quihi is a German settlement, being a branch of the main one at Castroville, and consists of only a few miserably rude huts—distance from Castroville, 10 miles.

Six miles further on the road is the town of Vandenburg, a third settlement made by the same colony; it consists of some 21 log houses or huts. The country around is beautiful and productive, and nothing but industry is required to make it teem with all the productions of agriculture. The nearest water is the Hondo, four miles distant. On reaching it, however, we found it but the dry bed of a river, with occasional ponds of water. Rising from the Hondo, the road stretches over a prairie country to the Seco, crossing a "hog-wallow" that we found nearly impassable.

The Seco, at this season, like the two previous streams, afforded no running water, notwithstanding the late rains. Two miles below the crossing, on the left bank, there is a settlement of Germans, at Dermis. Here, as at Vandenburg, great inconvenience arises from the want of water; and while we were encamped on the banks, the people had to drive all their cattle two miles to a pond found in the bed of the stream. This has been selected as a site for a military post; and on our return we found stationed here two companies, one of dragoons and one of infantry—the distance from Vandenburg, 12.78 miles; distance from San Antonio, 55.37 miles.

From the Seco, the country is undulating in appearance for several miles, and then opens out into a level prairie, which continues to Ranchero creek—distance from the Seco, 8.38 miles.

Four miles further is the Sabinal—a clear, cool, delightful, running stream, with banks bordered with large trees, suitable for building purposes. Leaving the Sabinal, the country is more rolling and diversified; the growth of small mezquite bushes begins to take the place of the open prairie. With but little change, the road continues its westerly course across the Comanche creek, and thence to the Rio Frio, 13.87 miles. We found in the Rio Frio no running water. Its banks are high, presenting in places a wall of limestone of considerable height; and evidences of its being swollen to a stream of large size, at times, were visible. Its bed is covered with well attritioned limestone, and its edges are bordered in many places with oaks of large growth. Thus far the road over which we had travelled is known as Wool's, or the Presidio road, and extends to the Rio Grande.

But at the crossing of the Rrio Frio, the road to El Paso leaves it, and commences its course over the hitherto untrodden prairie. Bearing a more northerly course, it strikes the head-waters of the Leona above the site of the military post.

The Leona—a clear, cool, and beautiful stream—has its source in this neighborhood, and forms, in the course of a few miles, a creek some fifty feet wide, flowing through a dense forest, on either side a quarter of a mile in width. The lands on this stream will vie in fertility with any portion of Texas; and the abundance of timber scattered over the whole extent of the Nueces adds much to its value. No part of the State offers greater inducements to the agriculturist, and as a grazing country it is unrivalled. Indeed, the same may be said of the whole extent of country from San Antonio to the Nueces. The post is located on the left bank, above the Presidio crossing, near a rocky conical hill or mound. It is a beautiful site for a military station, shaded as it is from the scorching rays of the summer's sun by a dense foliage, and the forest that renders it cool in summer shielding it from "northers" in winter.

From here Lieutenant Colonel J. E. Johnston and Lieutenant W. F. Smith, Topographical Engineers, and party, with a small train of wagons, proceeded in advance, to commence their explorations of the country, and the opening of a road. The recruits having joined the battalion, the whole expedition moved to the Nueces on the 19th. At the point where the road strikes the river, it flows through a sandy bottom land, near a half mile in width, covered with large trees.

We found the Nueces, at that season, a clear stream, running over a bed of white stones and pebbles, and affording a volume of water forty feet in width, and about one and a half in depth, though it shows signs of having been at times a large river, forcing in its course far above its present bed large quantities of rocks, rounded by the action of the current.

The grazing on the left bank is good: distance from the Leona, nine miles. Below the crossing a short distance, bituminous coal is said to be found in great abundance. Passing the Nueces, the general features of the country begin to change, and it becomes slightly hilly. At irregular intervals, the hills rise on the left to considerable elevation. The rich loamy soil is found only in the valleys. Limestone rocks make their appearance on the surface, and the hills are stony and barren. This continues about ten miles to Turkey creek. The valley at the head of this stream is of large extent and fertile, and covered with a large growth of mezquite trees. The banks of the creek are bordered with post and live oak. The grazing is fine and abundant. At this place, owing to heavy rains, the command was stopped nine days. The road heads the main spring from which the creek rises, though, on our return, water flowed from a small lake a little higher up.

After leaving the valley of Turkey creek, the country becomes more rolling, and the trees more scarce, giving it the appearance of a more open country. A march of about thirteen miles brought us to the bed of a creek, with rain water collected in large ponds. Three miles further on, the road crosses Elm creek. Below the crossing, which in summer is dry, the water runs from a spring, and forms a small creek, that flows over a rocky bottom. It doubtlessly derives its name from the trees that border its shores, though post oak and hackberry are the principal ones that grow near its source.

The next stream of note is the Las Moras, which takes its rise below the road. Its waters, gushing out from the springs, form at once a large creek. Trees line its banks as far as the eye can reach. To the north rises a conical hill that may be seen many miles distant, and is known as "Las Moras mound."

Formerly this stream was much resorted to by the Indians, and large, well-beaten trails are now seen following down its course. From the Las Moras to the Piedra Pinta, a distance of over seven miles, the country continues the same general appearance. This stream is about ten feet wide, near three deep, running over a bed of limestone. The crossing is bad, the banks being very boggy.

Leaving the Piedra Pinta, the country is open, with only here and there a few mezquite trees. The approach to the Rio Grande is marked by the appearance of distant mountains on the left, now distinctly visible from the rising ground. The next water is the Zoquete, a small stream that flows through a bed of rushes. The surrounding country is an open prairie, the soil good, and covered with fine grass. At the point where the road crosses this creek, it branches, one branch bearing the name of Maverick's creek. The crossing is not good, the soil being miry. About three miles in advance, the road crosses Arroyo Pedro, a creek of clear water, coursing along the wide stony bed of a stream which, during the rainy season, is swollen to the dimensions of a river. The crossing is good. Large oaks are found in groves on its shores. Beyond this arroyo the soil becomes stony and barren, and covered with cactus and dwarf chaparral, as far as the San Felipe. The road crosses this stream a little way below its head-waters.

To the north of the road, and a half mile distant, there is a beautiful spring of water, fifty feet in diameter at the surface, the sides of which incline towards a centre, like an inverted cone, and then, sinking in a cylindrical form to the depth of twenty-eight feet, through a soil of hard clay, afford a passage for the water to rise. The water comes to the surface with slight ebullition, and flows off in a volume that would fill a cylinder two feet in diameter. This spring is the source of the San Felipe; as it flows on, the volume of its waters is increased by other large springs, on either side, until it becomes a creek, when it empties into the Rio Grande, eight miles below the crossing, some thirty feet wide and several feet deep. Near its junction with the Rio Grande, its banks are shaded with large groves of pecan, maple, elm, and mulberry trees. This is the last of those small, clear streams, flowing through fertile valleys, with banks admitting every access to their waters. At this place, Major Van Horne, with the command, started in advance, on the 8th of July, leaving the supply trains an escort. We moved on the 22d, and thus continued the march to El Paso. Eleven miles distant is the San Pedro river, beyond which, and close by, on the north, is the great table formation. These features of the country may tend, ere long, to point the San Felipe out as a site for a frontier post.

The banks of the Rio Grande, below the mouth of the creek, for many miles, are nearly or quite inaccessible. From the San Felipe to the San Pedro, the country becomes more elevated, inclining to a high plain, far below which, in a deep, rugged cañon, the waters of the latter find an outlet into the Rio Grande. The descent to the river is made through crooked ravines, that required much labor to make them passable.

Viewed from this point, the San Pedro is a stream about sixty yards wide, running over a level bed of solid limestone rock. This is perhaps the only point at which it is possible to gain the opposite bank, for several miles, either up or down the river. When returning, we found that during our absence the autumnal rains had caused a great freshet, and the usually shallow waters had risen nearly twenty feet.

From the table land above, on either side, the country presents a dreary aspect, and no traces of the river can be seen in the depth below. About two miles beyond, water is found in a ravine; and near by is the only encamping-ground in the vicinity. From some rude Indian paintings on the rocks, it has been called the "Painted caves." From there the road continues up the ravine to the open country; and the first water we found beyond was at some springs sunk in the open plain at and near Pallas Blancas. In July, but a scanty supply of water was found here for so many animals; but, on our return, in November, we found it a running stream. The grazing is good, but no wood whatever is found.

From Pallas Blancas the road gradually ascends for a short distance, and then runs apparently parallel to the river, with a succession of hills on the left. About eight miles further on, the road passes through a gorge of the mountains, and then stretches out over some high table land for several miles, until it commences winding around the base of the irregular mountains, now rising and then descending, as it approaches the river again. For five or six miles it is very rocky and rough; and during the whole distance the country is a constant succession of hills on hills, destitute of grass and wood, and giving support only to the saw-leaf palmetto. It is a miserably rough, broken, and barren region, avoided alike by every living thing. By winding around the base of the mountains, a descent is made to the river.

The San Pedro, from its source to this point, flows down a valley formed by mountains on either side, and which are not unlike, in appearance, those on the banks of the Hudson. The valley varies from a quarter to one and a half miles in width, up which the road runs, crossing and recrossing the stream many times, and often following up its bed over a continuous mass of rounded and attritioned rock, varying from an inch to two feet in diameter.

In many places, the road over which we had passed, we found, on our return, had been at least twenty feet under water. All the way up the valley, at intervals, the road is very rough—particularly at some of the crossings. The grazing is poor until you reach the head of the valley, where it is excellent—the gentle slopes of the mountain sides being covered with gramma grass. It is a place resorted to by the Indians, and numerous lodges are found by the water's edge.

At the point where the road leaves the stream, the valley is divided. Following the more westerly one a distance of nine miles brings us to the table lands that stretch between the waters of the San Pedro and Pecos rivers. It is of limestone formation, with horizontal strata, and the general appearance is that of a vast level, unbroken plain; but such is not the case: valleys extend out from the streams; from these others branch off to the right and left, ramifying the country in every direction; and near the Pecos these valleys head in innumerable chasms and cañons, traversing the plain in every course, with rocky sides so high and steep as to form impassable barriers. In places, and particularly about Howard's springs, the valleys, with all these ramifications, seem to have quietly sunk from the general level—the same strata of stone marking the precise level on the different hill sides for miles. But these apparent hills are but the natural slopes of earth from the valleys to the generally level lands above.

The nearest water after leaving the San Pedro is found at Howard's springs, forty-one and a quarter miles distant. The road is good, and the grass in the valleys very fine, consisting of gramma and fine mezquite. The springs, from the large basin they form, afford a small stream of running water in the summer, which, after flowing a short distance, sinks into the ground. Wood, in sufficient quantities for fuel, is found near the springs. It is a place much resorted to by the Indians. From thence to Live Oak creek, the next reliable water, is a journey of thirty-two miles, though after rains water may be found in pools in the rocky bottoms of ravines near the road. When approaching the Pecos, the road leads down a steep hill into a valley, along which it continues several miles to the valley of Live Oak creek. After crossing this stream, the route is down its right bank to the valley of the Pecos, and thence up it to the crossing.

For the distance of near forty miles, the route lies up the east bank of the river. A few miles below the ferry, the valley of the Pecos disappears, and the mountains on either side approach each other very closely. Proceeding up, they gradually widen out, forming a level valley from one to three miles in width; and a little above where the road leaves the valley, they stretch to the left over the plain in a broken, irregular line.

The Pecos is a remarkable stream, narrow and deep, extremely crooked in its course, and rapid in its current. Its waters are turbid and bitter, and carry, in both mechanical mixture and chemical solution, more impurities than perhaps any other river in the south. Its banks are steep, and, in a course of two hundred and forty miles, there are but few places where an animal can approach them for water in safety. Not a tree or bush marks its course; and one may stand on its banks and not know that the stream is near. The only inhabitants of its waters are catfish; and the antelope and wolf alone visit its dreary, silent, and desolate shores. It is avoided even by the Indians.

The grass on the lower part of the stream is good; but further up the salt marshes begin, and it becomes coarse. The average width of the river is about sixty feet, and its depth eight feet. A few miles above the point where the road leaves the river, there is an Indian ford; near thirty miles still further up is the "Horse-head crossing," on the Fredericksburg route; below this is the ford where the great Comanche war-trails pass from the north down to the great bend in the Rio Grande, and thence into Mexico; below this is Connelly's crossing. The road up the Pecos is good; the greatest difficulty is in watering the animals, rendering it a choice whether to do it by means of buckets or cutting away the banks, if the water be high, and letting it into the salt lakes near the shore.

Leaving the Pecos, the road turns directly to the west, up a wide valley or plain, with hills in broken ridges on both sides. As the distance increases, the soil becomes more and more sterile, without grass, and yielding support to nothing but dwarf bushes, Spanish bayonets, and stunted cactus. Continuing over a gently swelling hill, another valley is entered, following which about six miles, water is found in ponds, some of them quite deep, surrounded by a tall growth of rushes and cane. The water rises from a rocky bottom, and, as it imperceptibly glides away, gives life and freshness to the coarse grass and cane. This water is distant from the Pecos about eighteen miles, and has been called Escondido creek. The grazing is not good, and wood for fuel is scarce. Eight miles further on are the Escondido springs. The water gushes out from beneath a shelf of rocks, and flows some distance down the creek. The country around is rocky and barren, covered with chaparral and prickly pear. The grazing is limited, and wood by no means plenty.

From Escondido to the Comanche springs the road is good. The hills now gradually disappear, and the country becomes open. The soil is light, and, on being trodden up by our animals, was wafted by the strong wind over the prairie, covering the bushes and grass for miles. By the volumes of dust that arose, the trains could be descried at a great distance; and, thus viewed, the clouds of dust that filled the air appeared like smoke from the prairies when on fire. Fortunately, the wind blew directly across the road: otherwise the animals would have suffered very much.

The Comanche springs, situated as they are in the open plain, have long been a celebrated encamping-place for the Indians. Here four roads may be said to cross at the same point: first, the great Comanche war-paths, leading into Mexico, marked by the bones of animals; second, Connelly's trail to Presidio del Norte; the route of emigrants from Fredericksburg to Presidio; and the road from San Antonio to El Paso.

The water rises from a number of springs, and forms a stream of excellent water, perhaps twenty feet wide and two feet deep, which, after flowing some ten miles, disappears in a salt plain.

The grazing is pretty good. The only wood for fuel consists of dead chaparral and mezquite bushes in the vicinity. The place is noted for the number of bones of horses and mules scattered around its waters.

From these springs to Presidio del Norte the distance is estimated at one hundred and sixty miles; thence to Chihuahua, one hundred and fifty miles; from here to Paso del Norte, it measures two hundred and seventy-nine miles; from El Paso to Chihuahua, the distance is estimated to be between two hundred and forty and two hundred and eighty miles. These distances show the advantage of the road from here to Chihuahua, and large trains with emigrants have already passed over it; and, as commerce is usually forced by enterprise and competition into the nearest and cheapest channels of communication, this may in time divert it from those over which is now carried.

The next watering-place on the route is the Ojo de Leon. The country between the two places is extremely sterile. The water rises to the surface from out of springs, thirty or forty feet in diameter, that sink to a great depth, like large wells. • The water runs from one spring to another, and finally, in the course of a half mile, sinks into the earth. Near the springs the ground is bare, and covered with a finely-crystallized salt, which at a distance appears like snow. The odor of sulphur is perceptible about the springs. The grass is course; and no wood, except from the dead bushes, can be procured for fuel. Quitting Ojo de Leon, the road still continues over a dreary, barren country, without timber or grass, until it enters the valley of the Sierra Diablo.

The general features of the country now change: mountains rise on the right and left; the limestone formation has generally disappeared; and the hills wear a sombre appearance, from the dark rocks of the primitive formations. The distance from the Ojo de Leon to the Limpia is near forty miles; and no water intervening can be relied on, though at certain seasons it may be found.

At the point where the road strikes the Limpia, it is a small stream, rising from its rocky bed, and, flowing a short distance, soon disappears. The hills were here, in August, clothed in verdure as green as if it were early spring. The country is beautiful; and the mountains, covered with green grass to their summits, present a pleasing appearance.

Leaving the valley, the road enters the Wild Rose pass. But few places can present anything more lovely than this little valley, surrounded as it appears to be by a wall of vertical rocks, rising a thousand feet in altitude—these rocky walls partly forming the sides of mountains that rise still higher, and overlook the valley from every point. From here the road leads over a spur of the mountains, and descends on the other side, and, continuing up the bed of the stream several miles, through a deep, narrow cañon, leads to a more elevated plain, in which this little stream takes its rise. This cañon in some places is not more than two hundred yards in width. Columnar basaltic rocks, that rise one behind the other to many feet in altitude, form its sides, and present a singular appearance.

The mountains of the Sierra Diablo do not form a single continuous ridge, but rise in irregular order, mountain on mountain, and peak on peak, covering an immense extent of country, forming innumerable small shaded valleys, deep cañons, and ravines, that wind in a circuitous course around their base.

The country, viewed from the top of one of the highest mountains, presents to the eye of the beholder, in every direction, hills, in their pristine grandeur, as countless as the billows of the ocean. Far and wide these ten thousand single conical mountains rise, intersecting each other at their base, or higher up their sides, forming an impassable barrier, had not some convulsion of nature seemed partly to have opened the pass and cañon through which the road runs.

The first encampment on the plain is called the Painted camp. Gramma grass is abundant, and wood plenty. The Limpia here, though near its source, affords more water than where it was first met, thirty miles below. A little distance up the stream there was growing a small field of corn, planted by the Indians; and on its banks were some of their lodges, constructed of willow sticks bent in the form of an arc, and interlaced at the top. From Painted camp, the road continues over the plain, and is remarkably good. For several miles it runs through a prairie dog town; and over the whole country they inhabit the herbage is kept closely cropped by those little animals, and the fresh grass springing up gives it the appearance of a bright lawn.

By the road side, fourteen miles distant, beneath a large boulder of granite, water may be found; but it was unfit for use when we passed it, having been completely trodden up with mud by the animals of the advance trains.

The first reliable water is at Smith's run, twenty-six miles from the Limpia. The last six miles of the road runs on ground covered with small angular fragments of rocks, rendering it very rough. This creek is found in a ravine at the base of a high range of mountains on the right; and to reach it, the road turns off the direct course near two miles. The grazing is good, and wood is found in abundance.

These mountains on the right form a lofty and continuous ridge, presenting an extremely jagged and serrated crest. They are formed principally of rocks of igneous origin. Near their tops, forests of pine are visible, and some logs, borne down by the mountain torrents, were discovered in the ravines. Continuing along the base of these mountains, water is found again in some springs ten miles distant. But from here to Eagle springs, a distance of sixty miles, no certain or living water is found, though there are intermediate ponds, and Rain Water creek, twenty miles distant, is sometimes swollen to a stream of considerable size. Between these points the country is mostly an elevated plain. The road, leaving the mountains on the right, passes over to the range on the left. From the plain other chains of mountains rise, and, running towards the north in a parallel direction, terminate in the vast plain east of El Paso. Eagle springs are found in a ravine formed by the spurs of the mountains. Although the precaution was taken to march the train in four divisions, each on consecutive days, yet water was not found sufficient for one-third of the animals: consequently, they had to travel seventy miles without water. The water did not run, but merely oozed out of the ground, and was collected in numerous holes dug for that purpose. During most of the year, perhaps, more water might be found; and now, at all seasons, there *will be* found in the pits that were sunk enough for ordinary trains. From Eagle springs, the road leads near the mountains on the left, until it crosses over to the plain beyond, and runs towards a chain of mountains that rise near the Rio Grande; continuing near their base, it enters a deep rugged cañon; and, after winding down its course a few miles, the spurs of the mountains diminishing in height, the cañon opens into the plain beyond, and the waters of the Rio Grande are visible, about a league and a half distant.

The bottom lands of the Rio Grande valley, on the American side, to the lower end of the island, a distance of fifty-five miles, are in many places very fertile. Timber is thinly scattered over the whole extent. The road up the lower part of the valley leads over a sandy soil, and is not good; the grass is coarse, and the grazing but ordinary. The road crosses over a shallow ford to the island, and, passing through the villages of San Elizario, Socorro, and Isleta, recrosses to the main land at the upper ford, and continues thence to the intersection of the Santa Fe road at the rancho opposite El Paso—making the distance from San Antonio six hundred and seventy-three miles. The worst portions of the route are found on the San Pedro and up the valley of the Rio Grande.

The amount of labor required to open the road, and render it fit hereafter for military and commercial purposes, gave constant employment to a large working party during all the time we were on the march.

The long distance in advance that the engineers were obliged to make reconnaissances before determining the route from one point to another rendered their duties arduous.

It was not enough to know that a road could be made up one valley, or that a range of mountains could be passed, but it became necessary to explore the country further beyond, to definitive points, before the opening of the route. When the nature of the country is seen by those who may hereafter pass over the road, it may excite surprise; but it will not be that so practicable a route has been found, but rather that any was found at all.

The town of El Paso is wholly situated in Mexico—there being, excepting the villages on the island, but three houses on the American side.

Beginning at a point on the Rio Grande ten miles *above* the town, and following *down* the Santa Fe road on the left bank of the river, the continuous chains of high mountains on the left approach close to the river, and, rising on the opposite side, stretch off to the south. Through the spurs of these mountains the Rio Grande forces its way; and this is "El Paso" (the pass) of the river.

A few miles below this point, and near the town, the river has a fall of some twelve feet. The water from this elevation is conveyed in large "zequias," or ditches, for the purposes of irrigation.

Below the pass, and beyond the mountains, (approaching by the Santa Fe road,) the country opens into a broad plain, in which the *valley* of El Paso lies. The valley on the American side is narrow, if the island be excluded—the greater portion being on the opposite side, in which the *town* is situated.

The plaza and main buildings of El Paso are in the upper end; but the dwellings extend down the valley, forming a continuous village for about twelve miles. The houses are universally built of "adobes," and, with few exceptions, are but little better than mud hovels.

A garrison of two hundred men is stationed in the town; and the sentinels placed on the banks of the river are, to a certain extent, the guardians of the ford and the revenue.

The people for years have lived under the constant fear of the Indians, and not without cause; for the Apaches have committed repeated depredations in open daylight in the sight of the town. From this cause, and the miserable system of "peonage" that prevails, the products of agriculture are barely sufficient to support the inhabitants; and grain to supply the wants of emigrants, and for other purposes, has to be brought from Chihuahua.

The grape is extensively cultivated on the irrigable lands, and in size and flavor is perhaps unequalled. The wine it yields, however, owing perhaps to the mode of manufacture or making, is rather indifferent. Some of the old wine is *said* to possess a fine flavor. Peaches, pears, and apricots are good. The apples are small, and very inferior in quality. Vegetation obtains an enormous growth. Cacti were found that measured six and a half feet in circumference.

Excellent stone for building is found in the hills close by. Saw-mills are now being erected in the Sacramento mountains, eighty miles distant, where timber is said to be found in great abundance.

In the plains near these mountains are extensive salt lakes, from which the State of Chihuahua draws its supplies. The testimony is concurrent in relation to the richness of the silver mines in the neighborhood; but the Indians have always prevented their being worked to any advantage.

The country around El Paso, excepting the bottom lands of the Rio Grande, is sandy, and covered with a dwarf growth of bushes. The large plains towards the east would afford a place for grazing cattle, were they secure from the Indians; and were water discovered in abundance, it might become a pastoral country.

The island is low and flat; the soil is rich and productive; and a system of irrigation is extended as far down as the settlements. Its population is estimated at two thousand.

The valley of the Rio Grande, in proper hands, is capable of supporting a large population; and, below the island, the larger portion is on the American side.

El Paso, from its geographical position, presents itself as a resting-place on one of the great overland routes between the seaports of the Atlantic on one side and those of the Pacific on the other.

Fourteen miles above, and our territory crosses to the opposite side of the Rio Grande; a little further to the north and west are the head-waters of the Gila: and should the route from El Paso to the seaboard on the west present no more difficulties than that from the east, there can easily be established between the Atlantic States and those that have so suddenly sprung into existence in the west—and which are destined to change, perhaps, the political institutions and commercial relations of half the world—a connexion that will strengthen the bonds of union by free and constant intercourse. The government has been a pioneer in the enterprise, and the little labor bestowed may not be lost to the public weal.

Table of distances, being accurate measurements made by the engineers, and generally indicating the points where water may be found.

	From point to point, or camp.	Distance from San Antonio.
From San Antonio—	Miles.	Miles.
To Castroville	25.42	25.42
" Quihi	10.00	35.42
" Vandenburg	7.17	42.59
" Arroyo Hondo	3.80	46.39
" Rio Seco	8.98	55.37
" Rancheros creek	8.38	63.75
" Sabinal	3.94	67.69
" Comanche creek	5.37	73.06
" Rio Frio	8.50	81.56
" Head of Leona	7.06	88.62
" Nueces	9.04	97.66
" Turkey creek	10.37	108.03
" Elm creek	15.23	123.26
" Las Moras	7.13	130.39
" Piedra Pinta	7.46	137.85
" Zoquete creek	9.02	146.87
" Arroyo Pedro	3.81	150.68
" San Felipe	8.98	159.66
" San Pedro	10.70	170.36
" Painted caves	2.54	172.90
" Pallos Blancos	16.48	189.38
" Camp second, crossing San Pedro	18.64	208.02
" Head running water in summer	8.63	216.65
" Camp—leave river valley	13.88	230.53
" Howard's springs	41.21	271.24
" Live Oak creek	32.40	304.14
" Ferry of Pecos	7.88	312.02
" Camp above ferry	12.59	324.61
" Second camp above ferry	16.23	340.84
" Third camp above—leave Pecos	7.74	348.58
" Escondido creek	18.24	366.82
" Escondido springs	8.58	375.40
" Comanche springs	19.47	394.87
" Leon springs	9.57	404.44
" Limpia	37.00	441.44
" Entrance to pass	6.97	448.41
" Camp in small valley	4.50	452.91
" Painted camp	14.08	466.99
" Smith's run	26.33	493.32
" Springs	9.00	502.32
" Rain Water creek	17.82	520.14

Table of distances—Continued.

	From point to point, or camp.	Distance from San Antonio.
	Miles.	Miles.
To Water-holes - - - - -	18.77	538.91
" Eagle springs - - - - -	21.57	560.48
" Entrance to cañon - - - -	22.61	583.09
" Rio Grande - - - - -	8.81	591.90
" Lower ford - - - - -	54.80	646.70
" San Elizario - - - - -	5.00	651.70
" Socorro - - - - -	5.45	656.15
" Isleta - - - - - -	3.10	659.25
" Upper ford - - - - -	7.05	666.30
" Coon's hacienda - - - -	7.09	673.39

It might be well to remark that, in all the streams between the San Antonio and the San Pedro, fish are abundant, and that in their vicinity deer and turkeys are found. The head-waters of the San Pedro are inhabited by beaver. Bear and peccary are also found in the same neighborhood; antelope on the other side of the Pecos.

Four different kinds of quails were killed: the common quail; the tufted quail, slightly ash-colored; the California quail, with a long plume from the top of its head; and another variety, with dark breast and black belly, the feathers on the breast having round white spots on them, and those on the back black spots—found principally on the rocky sides of the mountains.

This side of the Pecos, there is no difficulty in subsisting on game, if good hunters are with the parties.

In returning to San Antonio, we came by the Fredericksburg or upper route to the point where it crosses the Pecos.

Leaving El Paso, this road bears an easterly course for thirty miles to the Waco tanks. The road runs over a level plain, and is sandy and heavy.

The supply of water in these tanks depends on the rains. We did not find sufficient in them for a large train—scarcely enough for three hundred animals.

The passage of the Waco mountain is steep and difficult by the road that we made the descent. The next water of note is found at "Ojo de los Alamos," in small holes dug on the side of a granite mountain of rather difficult access. They will not contain a sufficient quantity for two thousand animals. Others could be sunk.

Distant from Waco tanks twenty-five miles, the grazing is fine; but there is no wood to be found for fuel, except small bushes. At Thorn's springs, about nine miles further on the road, water is found in abundance; but it has to be taken in buckets from a natural well in a cave vaulted over with rocks. From the Waco mountain to the "Ojo del Cuerpo" the road is excellent. Here water in abundance is found; the grazing is good, but there is no wood. Numerous saline lakes are found on the plain.

From here the road runs over several small spurs of hills, and then enters a large ravine, intersected by numerous small ones, which render the travelling very rough and difficult.

At the head of the large ravine, the long ascent of the Guadalupe mountains commences. The road winds along its side for near half a mile before the plain above is reached. The ascent is so steep that the maximum load that can be drawn up may safely be stated not to exceed one-half that which can be transported on ordinary roads.

Water was found at the head of the ravine, and in a forest of pines six miles beyond, and again a few miles in advance.

The Guadalupe mountains rise abruptly from the plain near this point to their highest elevation, and, in an unbroken chain, stretch over the table land in a northeasterly direction, until the tops sink beneath the horizon in the distance.

From these mountains, one vast, irregular, and slightly-broken plain or "mésa" extends to the Pecos river, and thence beyond view towards the head-waters of the Colorado and Brazos rivers.

After striking the Pecos below Delaware creek, the route lies down the river to the "Horse-head crossing," a distance of over one hundred and seventy-five miles.

But few places can be found more solitary, or that present a more dreary appearance, than all this region of the Pecos. The only sign of life or moving thing is now and then a single deer, a few antelope, a flock of ducks circling over the lagoons, or a solitary crane winging his way up the course of the stream.

The numerous salt marshes through which the road runs were very miry, and the animals would sink down in the quicksand, unable to rise.

The streams that carry to the river the surcharged waters from the salt lakes on the plain were with difficulty passed; and it is from them that the water of the Pecos derives some of its saline and bitter properties.

The grass is coarse and salt, and wood for culinary purposes is with difficulty obtained.

The country on the left bank of the Pecos is a little more elevated than that over which we came, and appears free from marshes.

The country about the Horse-head crossing was very boggy. From there, striking out from the river to avoid the salt marshes, the return route joins the one over which we went to El Paso near the point where it turns off from the Pecos for Escondido springs. The time occupied in returning with a small train of about thirty-five wagons was forty-one days. The upper route from the Horse-head crossing on the Pecos continues, by way of the Concho and San Saba rivers, &c., to Fredericksburg, and from thence to the seaboard, either by San Antonio or Austin, and has been examined and surveyed by Lieutenant F. T. Bryan, Topographical Engineers. Such were the routes over which we travelled. But, in conclusion, it might be observed, that a road following up the level country that obtains between the Pecos and the Sierra Diablo range to the point where these mountains terminate in the plains to the north, and then striking over towards the Rio Grande, leaving the Guadalupe mountains to the right, would avoid the passes of the one and the heights of the other, and run throughout its whole extent over a comparatively level country, favorable to transit by steam; but the difficulty of procuring running water at proper intervals would seem to render intercommunication impracticable by the ordinary means of travelling with wagon trains.

S. G. FRENCH,
Captain, and A. Q. M.

31st Congress, [SENATE.] With Ex. Doc.
1st Session. No. 64.

REPORT

OF

THE SECRETARY OF WAR,

COMMUNICATING

The report of Lieutenant J. H. Simpson of an expedition into the Navajo country in 1849; and, also, the report of Captain S. G. French relative to the road opened between San Antonio and El Paso del Norte.

July 6, 1850.
Read.
August 10, 1850.
Ordered to be printed with Ex. Doc. No. 64, and that 3,000 additional copies be printed, 300 of which are for the Topographical Bureau.

War Department, *Washington, July* 3, 1850.

Sir: I have the honor to transmit herewith copies of reports from Lieutenant J. H. Simpson, of the Corps of Topographical Engineers, and Captain S. G. French, of the Quartermaster's Department, with accompanying maps and sketches, in compliance with a resolution of the Senate of the 8th ultimo, requesting "copies of the journals of all reconnaissances returned to the Topographical Bureau by officers of the United States making such surveys within the last year, and not heretofore communicated, together with copies of the maps and sketches belonging to said reconnaissances; also, the report of Captain French, of the Quartermaster's Department, designating a route for a military road from San Antonio to El Paso."

Very respectfully, your obedient servant,
GEO. W. CRAWFORD,
Secretary of War.

Hon. Millard Fillmore,
President of the Senate.

Bureau of Topographical Engineers,
Washington, July 2, 1850.

Sir: Under a resolution of the Senate of the 8th June, I have the honor to transmit the report and map of Lieutenant J. H. Simpson, Corps Topographical Engineers, of an expedition into the Navajo country in 1849.

The resolution calls for all sketches and drawings belonging to reports.

In the present case there are seventy-five sketches and drawings of great interest, and highly necessary to illustrate the report. It has not been possible to have these copied in time, but, in the printing of the report, the engraver will be allowed access to the originals, from which he would rather engrave than from copies, and which course will also save time.

In the printing of the report, it is respectfully suggested that the printing of the map and sketches should be done under the superintendence of this office, from the belief that much time would be saved thereby.

Respectfully, sir, your obedient servant,

J. J. ABERT,
Col. Corps Topographical Engineers.

Hon. G. W. Crawford,
Secretary of War.

Journal of a military reconnaissance from Santa Fe, New Mexico, to the Navajo country, made with the troops under the command of Brevet Lieutenant Colonel John M. Washington, chief of the 9th military department, and governor of New Mexico, in 1849, *by James H. Simpson, A. M., First Lieutenant Corps of Topographical Engineers.*

Santa Fe, N. M., *April* 11, 1850.

Sir: I have the honor to submit, hereto subjoined, my journal and map of a reconnaissance of the country traversed by the troops under the command of Brevet Lieutenant Colonel John M. Washington, chief of the 9th military department, and governor of New Mexico, in an expedition against the Navajo Indians, in the months of August and September of the year 1849.

In addition to the journal will be found a number of appendices, viz: "A," my report to Colonel Washington of a reconnaissance of the borders of the Navajo country, with a view to the establishment of a post; "B," a comparative vocabulary of the language of the Pueblo or *civilized* Indians of New Mexico, and of the *wild* tribes living upon its borders; "C," a letter from Assistant Surgeon John F. Hammond, of the army, giving a description of a room he saw among the ruins of *Pueblo Bonito;* "D," a schedule of minerals illustrative of the mineralogical and geological character of the country traversed; "E," a table of geographical positions; and "F," a table of astronomical observations, with the results of calculation.

I also submit a number of sketches illustrative of the personal, natural, and artificial objects met with on the route, including portraits of distinguished chiefs, costume, scenery, singular geological formations, petrifactions, ruins, and *fac similes* of ancient inscriptions found engraven on the side walls of a rock of stupendous proportions, and of fair surface. For these truthful delineations, and the topographical sketches, I am indebted to my two assistants, Messrs. R. H. Kern and E. M. Kern, brothers—the former having furnished, with few exceptions, all the sketches of scenery, &c., and the latter the topography and other artistical work displayed upon the map. To both these gentlemen I tender my grateful acknowledgments for the kind, zealous, and effective manner in which they ever were found ready to co-operate with me in the discharge of my duties; and I owe it to them also to state that, having left Washington the spring previous, with orders to return from Santa Fe as soon as practicable after my exploration of the Fort Smith route, I consequently came hither unprovided with the proper appliances necessary for the most successful exhibition of their skill and labor. This circumstance will explain the unfit character, in many instances, of the paper on which the sketches have been drawn, and which it required, even such as it is, the ransacking of almost every store in the place to sufficiently supply. But these gentlemen had learned what a practical acquaintance with life, in its more destitute forms, will always develop—a ready resort to, and application of, expedients; and this readiness was not without its value, under the destitution referred to.

I also submit an herbarium of plants, which I think will not be without interest, in its relation to the botanical character of the country passed through. For this collection I am indebted, upon my solicitation, to Assistant Surgeon John F. Hammond, who is entitled to all the credit for the zeal, industry, and labor which this department of research exhibits.

I also forward a box of minerals, the latter marked correspondingly with the numbers to be found on the margin of the schedule already referred to, as designated "D" in the appendix. A duplicate of the schedule will also be found in the box containing the minerals. These specimens, I trust, will not be without their value to the critical eye of a competent mineralogist and geologist, to whom I would be glad to have them referred. I would also respectfully request that a reference be made of the plants to an accomplished botanist, for his judgment and expression as to their true character, novelty, &c. It is to be regretted, however, that, in the absence of a barometer, or other proper instrument to determine the atmospheric elevation of the localities of the plants, their normal condition in respect to climate can only be approximately arrived at, under the hypothetical elevation assumed. The same want of precision, however, does not exist in respect to the position of their localities in reference to the eath's surface, it being stated absolutely in latitude and longitude.

The comparative vocabulary of the languages of the different Peublo Indians in New Mexico, and of the wild tribes inhabiting its confines, although by no means complete, will not, I trust, be without its value in the investigations that are being made in our country in regard to the ethnological condition of the various tribes which inhabit our domain. I think, among inferences which may be drawn, the singular, and as I believe the hitherto unknown, certainly unpublished, fact is evolved, that, among the 10,000 (estimated) Peublo Indians who inhabit New Mexico, as many as *six* distinct *dialects* obtain, no one showing anything more than the *faintest*, if any, indications of a cognate origin with the other. The vocabulary as distinctly shows the kindred character of the languages of the Navajos and of the Ticorillas branch of the Apache.[*]

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[*] Gregg, in his "Commerce of the Prairies," vol. 1, p. 269, says: "There are but three or four different languages spoken among them, (he is speaking of the Peublos of New Mexico,) and these, indeed, may be distinctly allied to each other."

The English author Ruxton, in his "Mexico and the Rocky Mountains," page 194, remarks: "The Indians of northern Mexico, including the Peublos, belong to the same family—the Apache; from which branch the Navajos, Apaches, Coyoteros, Mescaleros, Mogeris, Yutepias, Maricopas, Cherecaquis, Chemegerabas, Yurmarjars, (the last two tribes of the Moqui,) and the Nijoras, a small tribe on the Gila. All these speak dialects of the same language, more or less approximating to the Apache, and of all of which the idiomatic structure is the same. They

In regard to the geographical positions enumerated in appendix "E," which I determined in every instance by a series of astronomical observations, I do not claim for them that rigid approximation to the truth which a nice regard to the thermometrical and barometrical condition of the atmosphere, in the possession of the proper instruments, would have enabled me to arrive at; but I do claim for them, as they were in every instance referred chronometrically to the meridian of Santa Fe, and not to each other, and thus an accumulating error avoided, a degree of accuracy sufficiently high to subserve all the practical purposes for which the survey was made.

In regard to the map, it has been my aim to present on its face all the data necessary for a thorough knowledge of the country through which our route lay; and I think, with the information given in the table and note, no expedition can hereafter go over the same ground without being enabled to so prearrange its march as to make its progress comfortable and successful.

I cannot dismiss this introduction to my journal without acknowledging, as I now do, the important aid which I have received in the prosecution of my researches from the following-named gentlemen, who have assisted me in various ways, but chiefly by kindly interpreting for me, which their knowledge of the Spanish enabled them to do, whenever I found it necessary to call upon them: Chief Justice Joab Houghton; Señor Vigil, secretary of the province; Mr. Samuel Ellison, official translator in the State Department; Mr. James L. Collins, official interpreter to Colonel Washington on the expedition; Assistant Surgeons Lewis A. Edwards, Horace R. Wirtz, and John F. Hammond, of the army; and Captain Henry L. Dodge and Lieutenant Lorenzo Tores, of the Mexican volunteers.

I must also express my acknowledgments to Brevet Major Henry L. Kendrick, who daily furnished me with the distances from camp to camp indicated by the viameter which was attached to a wheel of one of his gun-carriages.

To the Topographical Department I must also express my obligations for the opportune receipt of the work entitled "A collection of tables and formulæ useful in geodesy and practical astronomy, by Captain Thomas I. Lee," of the corps, and which forms "No. 3" of the "papers relating to the duties of the Corps of Topographical Engineers." This work I found exceedingly useful in the solution of the astronomicol problems and geodetic operations incidental to my duties; and, containing, as it does, *multum in parvo*, and that in a comprehensive as well as succinct form, I cannot but regard it, on account of the facilities which it affords for the prompt and scientific solution of the astronomical and geodetic questions

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likewise all understand each other's tongue. What relation this language bears to the Mexican, is unknown, but my impression is, that it will be found to assimilate greatly, if not to be identical."

This *sweeping* declaration of Ruxton, grossly erroneous as it is, shows with what assiduous care travellers who profess to give to the public facts as they find them should distinguish between what they have derived second-hand, and which is, therefore, to be taken with proper distrust, and that which they have obtained directly at the fountain-head, which is alone to be received as philosophically satisfactory. I am the more surprised at the remarks of this author, as, from the title-page of his work, I notice that he, at the time he was making his investigations, was a member of an "ethnological society."

to which our duties are constantly giving rise, as a most valuable contribution to the corps.

J. H. SIMPSON,
First Lieut. Corps Top. Eng.

COLONEL JOHN J. ABERT,
Chief Corps of Top. Engineers, Washington, D. C.

JOURNAL.

Santa Fe, New Mexico, August 14, 1849.—To-day the following orders were issued from headquarters:

[ORDERS No. 32.] HEADQUARTERS 9TH MILITARY DEPARTMENT,
Santa Fe, New Mexico, August 14, 1849.

I. The colonel commanding intending to make a movement against the Navajo Indians, the following troops will rendezvous at Jemez, subject to further orders:

Four companies of the 3d infantry, under the command of Brevet Lieutenant Colonel Alexander, 3d infantry; two companies of the 2d artillery, under command of Brevet Major Kendrick, 2d artillery; Captain Ker's company, (K,) 2d dragoons; and Captain Chapman's mounted company of volunteers.

The infantry and artillery commands will move from Santa Fe on the morning of the 16th instant; and Captains Ker and Chapman will move with their companies and be at Jemez on the 19th instant. The artillery command will take one six-pounder gun and three mountain howitzers, in addition to their other guns.

II. The quartermaster's department will provide pack mules and packs for the transportation of the necessary baggage of the command, and for thirty days' rations for five hundred men; and the commissary department will furnish the necessary subsistence stores.

III. Lieutenant Simpson, Topographical Engineers, will accompany the expedition, making such a survey of the country as the movements of the troops will permit.

IV. Assistant Surgeon Hammond will leave the general hospital in charge of a citizen physician, until the return of Assistant Surgeon Edwards, and proceed with the command on the 16th instant.

By order of Lieutenant Colonel Washington:

JOHN H. DICKERSON,
Lieutenant, and A. A. A. General.

In consequence of said orders, all the departments of the service are busily engaged in preparing for the contemplated movement.

Santa Fe, August 15.—To day, in consequence of information having reached headquarters of the concentration of the Utahs near Albiquin, orders No. 32 have been so far modified that Captain Ker's company of dragoons, now stationed at Albuquerque, and Captain Chapman's company of mounted volunteers, now stationed at the *Placer*, instead of moving on Jemez, are to proceed to Albiquin, and, in conjunction with Major Grier's company of dragoons and Captain Valdez's company of mounted volunteers, the whole under the command of Brevet Lieutenant Colonel Beall, effect, if possible, a peace with the Utahs in that quarter, or, failing in this, prosecute a war against them. Effecting a peace, Captains Ker and Chapman, with their companies, are to join the main command under Colonel Washington at Chelly. Not accomplishing a peace amicably, or by force of arms, Colonel Washington will, after accomplishing his objects with the Navajos, join the troops in the Utah country.

First camp, August 16.—The preparations being in a sufficient state of forwardness, the portion of the troops referred to in orders No. 32 stationed at Santa Fe took up the line of march this morning, their destination being Jemez, *via* Santo Domingo. These troops consist of two companies of the 2d artillery, ("B," commanded by Brevet Major John J. Peck; "D," by 2d Lieutenant J. H. Nones; the battalion by Brevet Major H. L. Kendrick,) and four companies of the 3rd infantry, ("D," commanded by Brevet Captain George Sykes; "F," by 2d Lieutenant C. B. Brown; "G," by 2d Lieutenant Andrew Jackson; and "H," by first Lieutenant A. J. Williamson; the battalion by Brevet Lieutenant Colonel E. B. Alexander)—the whole aggregating (fifty-five of artillery, and one hundred and twenty of infantry) an effective force of one hundred and seventy-five men, under the command of Brevet Lieutenant Colonel John M. Washington, 3d artillery, commandant of the 6th military department, and governor of New Mexico. The officers of the staff are 1st Lieutenant J. H. Simpson, Corps Topographical Engineers; Brevet 1st Lieutenant James N. Ward, 3d infantry, acting assistant quartermaster and commissary; 2d Lieutenant John H. Dickerson, 1st artillery, acting assistant adjutant general; and Assistant Surgeon J. H. Hammond. Lieutenant Simpson has with him, to assist him in his duties, Mr. Edward M. Kern, of Philadelphia, and Mr. Thomas A. P. Champlin, of Buffalo. In addition to the officers mentioned, James S. Calhoun, esq., of Georgia, Indian agent, goes out with a small party of assistants to effect, in connexion with the colonel commanding, a proper treaty with the Navajos; and Mr. James L. Collins accompanies Colonel Washington, as Spanish interpreter.

Wagon transportation is furnished to the troops as far as Jemez, and then pack animals are to be resorted to.

The road taken by the artillery (see accompanying map, the red dotted line indicating the route pursued by the troops) was the usual one to Santo Domingo, *via* Agua Fria, (a small collection of *ranchos*—farms—six miles from Santa Fe,) and thence along the Rio de Santa Fe, on its east side, to Sieneguilla, a distance of 16.02 miles, where they encamped. The general course was east of south.

The infantry and my own party, having taken a more eastern route—that usually travelled by wagons to Algadones—after having marched about the same distance, sixteen miles, are encamped two miles to the east of the artillery, on a small tributary of the Rio de Santa Fe.

The face of the country to-day has been generally level—a few *arroyos* (dry beds of streams) intersecting it at intervals, and the famous Placer or Gold mountain, and the Sandia mountain, with some intermediate conical mounds, forming, to our front, the chief features of the landscape. (See plate 1.) Saving a very narrow and interrupted margin bordering the Rio de Santa Fe between Agua Fria and Santa Fe, and which was cultivated in corn, the country has exhibited one extended barren waste, with nought to diversify it but a few dwarf or bush cedars, sparsely scattered.

At Sieneguilla—a village composed of one Roman Catholic church and a few scattered ranchos—good grass and water are found, and sufficient fuel.

At this place, Captain Ker, with his command, has also encamped, on his way to Albiquin. It was the intention of Colonel Washington, after reaching Santo Domingo, to make a night march upon the Utahs about Albiquin, and thus, effecting a junction with Lieutenant Colonel Beall's command, strike the enemy a blow when he might be least expecting it; but Captain Ker's force being unexpectedly in advance of such a movement, it is abandoned.

Second camp, August 17.—The infantry, as also my own party, joined the artillery, in the cañon of the Rio de Santa Fe, just after the latter had left their camp. The general course to day was slightly south of west, the road threading the cañon* of the Rio de Santa Fe to its mouth, a distance of six miles; thence across the valley of the margin of the Rio Grande del Norte, seven miles, to the *Pueblo de Santo Domingo;* and thence by ford across the Rio Grande to our camping-ground, directly opposite Santo Domingo—the whole march having been 14.85 miles. Through the cañon, the road, on account of rocks and boulders, and for a mile and a half before reaching Santo Domingo, on account of sand hills, is rough; the remaining portion is level and good.

The cañon of the Rio de Santa Fe is quite interesting. Varying in depth from one hundred to one hundred and fifty feet, the Rio de Santa Fe trickling through it, its *mésa* (table) heights on either side are crowned by overlying basaltic trap. This trap shows eminently, in particular localities, the blackening, scoriaceous effect of fire; and in some places is to be seen underlying it an earthy formation of an ashy character, and in others a reddish porphyritic rock in beds slightly dipping towards the east. At the mouth of the cañon, on its north side, is a well-defined ash-colored formation of an argillo-silicious character, dispersed in layers, and presenting, with striking and pleasing effect, the appearance of the *facade* of a highly-finished piece of Grecian architecture. This object cannot fail to attract the notice of the traveller.

Debouching from the cañon, an extended plain—upon which I saw some fifty head of cattle grazing—stretches westward about six miles to the Rio Grande; the Jemez mountains appear on the further side of the river, quartering to your right; an extended *mésa* shows itself also beyond the river to your front; and the Sandia mountain lifts itself high and sublime to your left. Not a tree is to be seen until you can look down upon the Rio Grande, and then the cottonwood is noticed sparsely skirting its banks. The bed of the Rio Galisteo, which we crossed just before entering Santo Domingo, indicated only here and there that it was even moistened with water.

Santo Domingo, which lies directly on the Rio Grande, is a pueblo or Indian town, containing about eight hundred inhabitants. It is laid out in streets running perpendicularly to the Rio Grande. The houses are constructed of *adobes*, (blocks of mud, of greater or less dimensions, sun-dried;)

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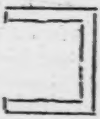
*The word cañon is most generally applied to a deep and narrow valley, enclosed on either side by escarpments. It sometimes, however, means a shallow valley.

are two stories in height, the upper one set retreatingly on the lower, so as to make the superior covering or ceiling of the lower answer for a terrace or platform for the upper; and have roofs which are nearly flat. These roofs are made first of transverse logs, which pitch very slightly outward, and are sustained at their ends by the side walls of the building; on these, a layer of slabs or brush are laid longitudinally; a layer of bark or straw is then laid on these; and covering the whole is a layer of mud of six or more inches in thickness. The height of the stories is about eight or nine feet. The lower stories have very small windows, and no doors; the lights of the windows, wherever there were any, being of selenite—the crystallized foliated form of gypsum. The mode of access to the building is by exterior ladders, which may be seen leaning against every house.

In the west end of the town is an *estuffa*, or public building in which the people hold their religious and political meetings. The structure, which is built of *adobes*, is circular in plan, about nine feet in elevation, and thirty-five feet in diameter, and, with no doors or windows laterally, has a small trap-door in the terrace or flat roof by which admission is gained. Directly below the opening, and detached from the wall, is a fire-place, in plan thus,



its height being about three feet—the opening referred to serving as a vent to the smoke.

The men, I notice, wear generally nothing but a shirt and a breech-cloth; the women, a dark-colored blanket, covering one shoulder, and drawn under the other, a girdle confining the blanket about the waist, and the arms being left free and bare. This appears to be their *ordinary summer dress.* The children run naked.

At the house of the governor, I noticed a woman, probably his wife, going through the process of baking a very thin spieces of corn cake, called, according to Gregg, *guayave*. She was hovering over a fire, upon which lay a flat stone. Near her was a bowl of thin corn paste, into which she thrust her fingers; allowing then the paste to drip sparingly upon the stone, with two or three wipes from the palm of her hand she would spread it entirely and uniformly over the stone; this was no sooner done than she pealed it off, as fit for use; and the process was again and again repeated, until a sufficient quantity was obtained—the necessarily rapid character of the process causing the perspiration to roll from her face in streams. The woman, noticing the interest I took in the operation, handed me a sheet of the food to eat. Like the Mexican *tortilla*, although I was excessively hungry, it did not fail to leave at the stomach a slight sensation of nausea. When folded and rolled together, it does not look unlike (particularly that made from the blue corn) a "hornet's nest"—a name by which it is sometimes called.

The Rio Grande, at the ford, is about three hundred yards wide, is between three and four feet deep, and is full of bars. Its bottom, in spots, is of quicksand character—two of the wagons stalling on this account.

The soil to day, excepting a very limited area upon the Rio Santa Fe, at Sieneguilla, and for a breadth of about a mile along the Rio Grande, is probably worthless for cultivation, and of but very slight, if of any, value for grazing purposes.

Our camping-ground, which is near some cornfields, is a fine one—the Rio Grande, besides furnishing us with water to drink, affording us a refreshing bath; and the grass in the vicinity being good, and wood sufficiently near.

A series of astronomical observations make the latitude of this camp 35° 30′ 56″; its longitude, 106° 29′ 45″.

Third camp, Jemez, August 18.—Not being able last evening, on account of the strong wind, to get satisfactory astronomical observations, I obtained some this morning, before daylight.

Our route to-day, to Jemez, a distance of 26.60 miles, was generally in a northwesterly direction, and, besides being exceedingly heavy on account of sand, and rough and uneven on account of sand hills and *arroyos*, did not furnish us a drop of water throughout its whole extent.

For the first nine miles, it was up a heavy sandy *arroyo*, at the fourth mile of which there was a short steep hill to ascend, and at the ninth a rather long and steep one—which surmounted, brought us to a piece of table land of about three miles in breadth, whence could be seen, almost due west, about thirty five miles off, the remarkable peak called *Cerro de la Cabeza.* This table land traversed, we reached the brow of the valley of the Rio de Jemez, whence, looking down upon and across the valley, a confused mass of sedimentary hills and mésa heights appeared to sight—the escarpment walls of the *mésa* being generally of a well-defined stratified character, and of sensible dip towards the south. To our right, and on *our* side of the Rio de Jemez, were *mésa* heights, crowned with basaltic trap, apparantly fifty feet thick. From the brow of the valley down to the Rio de Jemez, the road is very heavy and rough, on account of sand hills and *arroyos.*

Four miles from our last camp, I noticed on the route an outcrop of silicious limestone, containing, sparsely, some particles of felspar. Near this spot, observing a plateau or *mésa* from two hundred to three hundred feet high, which promised a fine view of the country we had been traversing, I ascended it, to scan the landscape. As I anticipated, a noble view extended itself before me. There lay, far off towards the northeast, the Santa Fe mountains; to the southeast, the Placer mountain and Sandia mountain; intervening between them, and just discoverable, lying beyond the gleaming waters of the Rio Grande, the little town of Santo Domingo; to the north and northwest, stretching far away, were the Jemez mountains; to the south, *mésa* formations, crowned with basaltic trap; and everywhere else, sparsely scattered over mountain and plain, the dwarf cedar.

The Pueblo of Jemez, as its prefix indicates, is an *Indian* town of probably between four and five hundred inhabitants, and, like the Pueblo of Santo Domingo, is built upon two or three parallel streets, the houses being of adobe construction, and having second stories disposed retreatingly on the first, to which access is had by ladders. I notice here, on the outskirts of the village, the usual accompaniment of Mexican and pueblo towns, the ragged-looking picketed goat enclosure—it giving to the suburbs an unsightly appearance. About the premises are probably a dozen of acres covered with apricot and peach trees. An infantry company of Mexican volunteers, under command of Captain Henry L. Dodge, is stationed at this place. A sketch of the pueblo and some curious-shaped sandstone hills in the vicinity is given in plate 4.

The Rio de Jemez, upon which the pueblo lies, is an affluent of the Rio Grande, varies from thirty to fifty feet in breadth, is of a rapid current, and tends southwardly. Its bed is a commixture of red sand and gravel. Patches of good corn and wheat skirt it here and there along its banks; and the extent of cultivable land bordering it may be estimated at about a mile in breadth. Its waters are palatable; good grass is found along it, and wood exists in the vicinity. Our encamping-ground, which is just to the north of the town, has, therefore, all the requisites to make it a good one.

The soil along the route to-day, excepting the narrow margin along the Rio de Jemez already mentioned, is utterly worthless for cultivation.

The latitude of this camp, by astronomical observation, is 35° 36′ 7″; its longitude, 106° 51′ 15″.

Third camp, Jemez, August 19.—The wagon attached to headquarters breaking down yesterday, on account of the rough state of the road, it did not reach us early enough in the evening to have our tents pitched. The consequence was, that the colonel commanding and his staff bivouacked for the night—a change which we found quite agreeable.

The troops will remain here for a day or two, until the assistant quartermaster, Captain Brent, can perfect his arrangements for a change from wagon to pack-mule transportation, and also for the purpose of giving time for the concentration of the Pueblo and Mexican force, which is to join us at this point.

This afternoon, a dance—called, in the language of the Jemez Indians, *Lou-pel-lay*, or the green-corn dance—having been reported as being about to be enacted in the village, several persons from camp, (among them my assistant, Mr. E. M. Kern, from whom I get my information,) went down to witness it. In order the better to see the performance, they took a position on one of the houses in the principal streets. (See plate No. 6.) When the performers first appeared, all of whom were men, they came in a line, slowly walking, and bending and stooping as they approached. They were dressed in a kirt of blanket, the upper portion of their bodies being naked, and painted dark red. Their legs and arms, which were also bare, were variously striped with red, white, and blue colors; and around their arms, above the elbow, they wore a green band, decked with sprigs of *piñon*. A necklace of the same description was worn around the neck. Their heads were decorated with feathers. In one hand they carried a dry gourd, containing some grains of corn, with which they produced a rattling kind of music; in the other, a string, from which were hung several *tortillas*. At the knee were fastened small shells of the ground turtle and antelope's feet; and dangling from the back, at the waist, depended a fox skin. The musicians were habited in the common costume of the village, and made their music in a sitting posture. Their instruments consisted, each, of half a gourd, placed before them, with the convex side up; upon this they placed, with the left hand, a smooth stick, and with their right drew forward and backwards upon it, in a sawing manner, a notched one. This produced a sound much like that of grinding corn upon a matate, (a slightly concave stone.)

The movements in the dance differed but slightly from those of Indians generally.

The party were accompanied by three elders of the town, whose business it was to make a short speech in front of the different houses, and, at particular times, join in the singing of the rest of the party. Thus they went from house to house singing and dancing, the occupants of each awaiting their arrival in front of their respective dwellings.

My second assistant, Mr. R. H. Kern, brother to my first assistant, Mr. E. M. Kern, joined me, from Taos, this afternoon.

Third camp, Jemez, August 20.—During the past night, we had an unusually heavy rain, attended with sharp thunder and lightning.

This morning, after breakfast, Major Kendrick, Assistant Surgeons Edwards and Hammond, Mr. E. M. Kern, and myself left camp for *Los Ojos Calientes*, (the Hot springs,) said to be twelve miles above, in the valley of the Rio de Jemez. The lieutenant governor of Jemez accompanied us as guide. Our course, which lay directly up the valley called the Cañon of San Diego, was slightly east of north. Soon after leaving camp, we passed some red-colored argillaceous rocks, well stratified, the dip of stratification on either side being anticlinal, and the gorge which we threaded being coincident with the line of strike. An upheave, therefore, must, in all probability, have taken place, the resulting force of which was doubtless normal to the line of strike. A sinking of the two series of stratification at the foot of their respective slopes could indeed have caused the like effect; but, the first mode of accounting for the phenomenon being the simplest, it is most reasonable to suppose it to have occurred.

Two miles from camp, we came to a Mexican settlement, which continued sparsely scattered along the river for about five miles. The most populous portion of it, called *Cañoncito*, we found to be about three miles from camp, at the mouth of the *Cañon de Guadalupe*. Here I saw, within a hundred yards of the village, a small gray wolf shying off very reluctantly from us.

For a distance of six or seven miles, the bottom of the Cañon de San Diego is pretty well cultivated—corn, wheat, and peppers being the chief product of the soil: the corn, which looked well, greatly predominated.

Beyond the settlements, the ruins of old *adobe* buildings were ever and anon to be seen, which, according to our guide, were once inhabited by Mexicans, who had deserted them from fear of the Navajos.

Nine miles up the *cañon* we found an old copper-smelting furnace, which looked as if it had been abandoned for some considerable period. It is quite small, is built of stone, and has arched ovens traversing each other at right angles, each oven being furnished with a stone grating. We picked up some fragments of copper ore (probably green malachite) which lay scattered around.

Twelve miles from Jemez, we came to Los Ojos Calientes. Here, desiring to make some examinations, and it being our purpose to regale ourselves with the eatables we had brought with us, we unsaddled our horses and turned them loose to graze.

On examination, we found the springs to be situated within the compass of a few feet of each other, some of them boiling up immediately from the bed of a small bifurcated branch of the Rio de Jemez. The principal one, which is in the branch mentioned, issues from a small knoll or heap of boulder stones, which seem to partake both of a calcareous and basaltic character, the vent not being more than a foot above the bed from which it springs. The volume of water which issues from it may be estimated at about a gallon and a half per minute. This spring, as well as all the other principal ones, shows a limited accumulation of a crystalline deposite about its mouth, which, on account of its fine-grained character and hardness, may probably come under the head of travertine. The complexion of the deposite is white, with a shade of greenish yellow.

We put into the jagged cup or bowl of the fountain some eggs and raw venison, both of which were cooked in about twenty minutes. The time required to do this would doubtless have been much less had the bowl been sufficiently concave to have admitted a more perfect immersion of the articles, and the fixture of a cover, by which the heat lost through evaporation could have been retained. As it was, upon an immersion by Major Kendrick of a thermometer, Dr. Edwards assisting him, the highest point to which the mercury would rise was 169°.

These springs are said, in diseases of a cutaneous or rheumatic kind, to possess powers of a highly curative character; and it is doubtless on this account that the arbors which we noticed near the main springs are placed over some basins, scooped out from the ground, into which the hot water finds its way. A view of these springs, with their accessory scenery, and among it the tower of a distant ruined church, may be seen in plate 14.

Observing, about a third of a mile above the springs, the ruins just mentioned, we saddled up for the purpose of visiting them. On reaching the spot, we found them to be the remains of an old Roman Catholic church, in dimensions about fifty feet front by one hundred and twenty deep. The tower, which was octagonal in form, and which rose up from the middle of the rear end of the building, was still standing, as were also the greater portion of the walls of the main building. The height of the tower I estimated at thirty feet. The thickness of the walls of the main edifice at base measured six feet. A good view of these ruins may be seen in plate 15.

It getting late, we were obliged to hasten our return to camp—a drenching rain, which had in the mean time sprung up, adding not a little to our alacrity. A spring, however, which we unexpectedly met with on our route, tempting us by its cool appearance, we could not resist the desire to alight and try its waters, which we found not less grateful than they were unexpected.

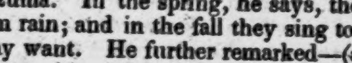
The cottonwood, the cedar, and pine, the latter of dwarfish growth, and all rather sparsely scattered, constitute the *sylva* of the valley. The wild currant we found growing in great luxuriance and perfection about the old church.

Third camp, Jemez, August 21.—This afternoon, Captain Dodge, the brothers Kern, and myself visited the Roman Catholic church of the village—the governor of the town, Hosta, procuring for us the keys, and acting as *cicerone*. The church, an adobe structure, some one hundred by twenty-eight feet in plan, appeared very old, and was evidently wasting away under the combined influence of neglect and moisture. The swallows, as is to be noticed in the Roman Catholic church at Santa Fe, seemed to be perfectly at home within it, and now, as in the church mentioned, brought home to me the appositeness of those beautiful remarks of the sweet psalmist of Israel to be found in Psalms, 84th, 3d. A pilaster and arch arrangement, with crosses at intervals, characterized the side walls; and a number of paintings, all daubs, excepting the central one, the wall back of the chancel. Hosta informed us that this central piece was a representation of San Diego bearing the cross. At present it is considerably defaced, but the touches of a genuine artist are yet visible upon it. None but a true son of the muse could have thrown into the countenance the expression of beautiful sadness with which it is radiant. In addition to the objects of garniture already mentioned, I noticed upon a projecting piece of the side pulpit a human skull and some bones, and in a side room, to which I could only peep in, some images and pictures.

Finishing our examination at the church, we visited the *estuffas* of the town, of which there are two. Both are one story high, and, like the one noticed at Santo Domingo, have no doors or windows laterally, and are only accessible from above, through the flat roof. They differ from it, however, in being rectangular—the one we measured being twenty by twenty-seven feet in the clear, and seven and a half feet high. On the walls were representations of plants, birds, and animals—the turkey, the deer, the wolf, the fox, and the dog, being plainly depicted; none of them, however, approaching to exactness, except the deer, the outline of which showed certainly a good eye for proportions. For an exact picture of these, both as regards details of form and color, and also as respects the dingy, smoky complexion of the walls upon which they are painted, I refer the reader to plates 7, 8, 9, 10, and 11.

Upon questioning Hosta in relation to the object of these *estuffas*, he informed us that they were after the custom of Montezuma, and for that reason they were not allowed to give them up. He also called them the churches of Montezuma. In the spring, he says, they go there to chant to him to send them rain; and in the fall they sing to him to obtaim any good thing they may want. He further remarked—(and I give what follows to show the superstition of these people, for he narrated it as if he thought it might be true)—he further remarked, there was a tradition among his people, that Montezuma, whenever in his travels he stopped for the night, would make a house in one hour; and that he would plant corn one night, and the next morning it would be fit to be plucked. He went on further to inform us that they worshipped the sun, moon, and fire. The moon he called the captain of the night. The sun, however, when he rises, he remarked, puts away all the children of the night, and therefore he is the great captain.

To the question of the object of the paintings upon the walls of the *estuffa*, he said they were *por bonito*, (for ornament.) The circles represent the sun and moon; the semicircles, clouds; and the barbed, zigzag line, the forked, destructive lightning. The emblem of good lighhtning he represented in pencil upon my note-book as terminating more bluntly, thus:



The two human figures with trumpets to their mouths, which may be seen illustrated in plate 9, he represents as the adjutants of Montezuma, who are sounding a call to him for rain.

Before the conquest, he says, according to tradition, the Jemez Indians were fighting with all the other tribes—those of San Felipe, Santa Anna, and Santo Domingo. At length a Spanish priest appeared among them very mysteriously. This priest, whenever he celebrated mass, made it a condition of his acceptance of them that they should every previous Saturday bring him wood. And it was his habit, whenever he wanted anything, such as skins or blankets, to take them. The people at length, getting enraged at such treatment, determined to kill him. He, hearing of it, however, disappeared as mysteriously as he had come. They then looked for his tracks; but, the snow having covered them up, they concluded he must have gone down the *Ojo Caliente!* (one of the hot springs I have already described.)

He further told us, that, when living upon the *mèsa* between the cañons of Guadalupe and San Diego, there came another *padre* among them, whom, whilst on his way to receive the confessions of a sick man, they killed. That, upon another occasion, whilst engaged in their dances, they were told that the Spaniards were below; but they did not believe it, and continued dancing. The consequence was, that, one night, after a dance, and when they had retired for the night, the Spaniards came upon them with all their force, and they, having nothing but their arrows and knives to defend themselves with, closed in with one another, and began to throw each other over the precipice of the *mèsa*. Just at this time, there appeared in the direction of the Cañon de Guadalupe *Nuestra Señora de Guadalupe*, (our Lady of Guadalupe,) and in the direction of the Cañon de San Diego the saint of that name! The Indians, noticing this, fled—some to Sandia, some to Isleta, and some settling here at Jemez. All, however, have since come to live at the last-mentioned place.

The *Pecos* Indians, he went on further to inform us, were the only people that speak the same language they do; that, during one of the revolutions of the country, when he was quite a youth, this tribe, being very much harassed by the Spaniards, (Mexicans,) asked permission of the people of Jemez to come and live among them. They not only granted them permission to do this, but sent out persons to help them get in their crops, and bring them and their property to their new abode. When they arrived, they gave them houses and fields. The old man and his daughter, who at the time were tending the sacred fire at Pecos, the enemy, he says, seized and beat—the daughter at length being carried away captive, and the old man escaping by the way of Galisteo to Jemez. This was the reason of the fire of Montezuma ceasing. He went on to state that the Pecos and Jemez Indians, though they speak the same language, differ somewhat in their religious customs. In relation, however, to Montezuma, the different Pueblo Indians, although speaking different languages, have the same belief. Yesterday, in getting some information from a Jemez Indian, I asked him whether they now looked upon God and the sun as the same being. He said they did. The question was then put, whether they still worshipped the sun, as God, with contrition of heart. His reply was, "¿Why not? He governs the world!" From this Indian I also learned that they worship the sun with most pleasure in the morning, and that they have priests to administer their own religion, which they like better than the Roman Catholic, which he says has been forced upon them, and which they do not understand. He said they were all the children of Montezuma, and a tradition had been current among them that they were to be delivered by a people who would come from the east; that, in consequence of the good treatment they were receiving from the Americans, they were beginning to believe that that people had come; that General Kearny had told them they would believe this more and more, because they would continue to be treated well by the Americans, and they were finding it so.

From Hosta I learn there are now living among his people only fifteen Pecos Indians, seven being male adults, seven female, and one a little girl. One Pecos male adult, he says, is living at Cuesta, one at Santo Domingo, and one in the Cañon of Pecos. These eighteen, he states, are all that are now living of this people.

For a portrait of Hosta, in his war costume, as also of his wife, in her best attire, with some of the accessories characteristic of their mode of life, I would refer the reader to plates 4 and 5. Hosta is one of the finest looking and most intelligent Pueblo Indians I have seen, and, on account of his vivacity and off-hand graciousness, is quite a favorite among us. A profile sketch of *Wash-u-hos-te*, a Pecos Indian, will also be seen in plate 12.

Fourth camp, August 22.—The arrangement for transportation by pack mules being complete, and the Pueblo levies, 55 in number, having joined us, the command also having been increased by Captain Dodge's company of Mexican volunteer infantry,* the whole force took up its line of march to-day for the *Cañon of Chelly*.† At the same time, Brevet Lieutenant Colonel Alexander, on account of indisposition, and Assistant Quartermaster Brent and Assistant Surgeon Edwards, on account of the theatre of their duties being at that post, returned to Santa Fe. Our route lay directly down the valley of the Rio de Jemez, the stream of which we crossed just above San Ysidro, a small Mexican settlement about three miles below Jemez. Three miles more brought us to our present camping-ground, where we find good water, tolerable pasturage, and wood in the vicinity. The valley, as far as San Ysidro, is hemmed in by secondary mountains, and within this extent is but slightly cultivated.

At San Ysidro I called to see Señor Francisco Sandoval, the proprietor of the copper furnace we saw two days since up the Cañon de San Diego. He informs me that the mine near this furnace was worked until about three years since; that one man could get from it ten arrobas‡ of rich ore per day, and that gold was found in association with it. He further stated that he had now *cached* (buried) near the furnace twenty-three *arrobas* of pure copper.

Several times to-day, on the march, a beautiful humming-bird, the first I have seen since I left the States, has been hovering about me. The last time it paid me a visit, I was seated under a tent, where it lit for a moment within a foot or two of my person, and then disappeared, not to be seen again.

The length of the march to day has been only 5.78 miles—it having been deemed prudent, on the first day's trial with the packs, to go but a short distance.

Fifth camp, August 23.—The troops decamped at 8 o'clock this morning—a Mexican, by name Carravahal, whose residence is at *San Ysidro*, accompanying them as guide. Our course lay generally for the day north of west, and for the first 14 miles directly up the Cañon de Peñasca—low mountains of a ridgy, primary character skirting it on the right, and mésa heights, of some 300 or 400 feet elevation, bordering it on the left. The formation of these latter is generally an ash-colored sandstone, alternating with a red argillaceous friable rock. A mile further, and we were upon the high land dividing the waters of the *Rio de Jemez* from those of the Rio Puerco—an extensive prospect of the valley of the latter, with the accessories of some high isolated mountain peaks, bursting unexpectedly upon us from this point. Among the peaks are to be noticed the *Cerro de la Cabeza*, the summit of which was an object of interest on our march from the Rio Grande to Jemez. This head mountain, I perceived, resembled very much in contour, though much higher, Cerro Tucumcari, a prominent landmark about 160 miles east of the Rio Grande, on the Fort Smith route. This mountain I described in my report of that route as resembling very much in shape the dome of the Capitol at Washington; and *Cerro de la Cabeza*, though not so good a representation, yet cannot fail to suggest to the traveller a like resemblance.

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*Lieutenant Lorenzo Torez, a subaltern of the company, accompanied the expedition.

†The orthography of this word I get from Señor Donaciano Vigil, secretary of the province, who informs me that it is of Indian origin. Its pronunciation is chay-e.

‡An arroba is a weight of 25 pounds.

The top of the high land referred to being reached, the road commences descending towards the Rio Puerco, two miles further bringing us to the *Rio de Chacoli*, a small affluent of the Puerco, upon which we are encamped.

Two miles from our last camp, and directly on the route, are several springs of a mineral character, the taste of the water sensibly indicating the presence of soda, (probably sulphate of soda,) nitre, and some ferruginous matter. One of these springs has made for itself a basin of an elliptical shape, which is several feet in diameter, and raised about three feet above the argillaceous soil from which it flows. The incrustration about the mouth of the spring appears to be of a calcareous character, and colored with iron. These springs, on account of my having left the road to examine a geological formation, I did not see; and for the information I have given I am indebted to Majors Kendrick and Peck.

In the vicinity of the springs, cropping out from the base of the mésa, forming the south wall of the cañon, I noticed large beds of earthy gypsum and sulphate of lime; and constituting the superior strata of the mésa was a formation, some eighty feet thick, composed of an alternation of crystallized fibrous gypsum and thin layers of argillaceous shale. At the foot of the escarpment, I picked up what appeared to be, from its taste and appearance, common salt, (chloride of sodium.) I afterwards noticed, four miles further on the route, another bed of gypsum.

About nine miles from our last camp, in the cañon, thrown together promiscuously, are some huge specimens of conglomerate boulders, one of them in magnitude probably not being short of twenty-five by twenty-five feet, or containing over fifteen thousand cubic feet. And near our present camp, there is to be seen cropping out of a side hill a red argillaceous rock, in appearance very much like that from which the Indians living on the head-waters of the Mississippi make their pipes.

It is observable that the overlying basaltic formation which I have already, in my journal, noticed as beginning at Sieneguilla, on the Rio de Santa Fe, and extending westward as far as the valley of the Rio de Jemez, has not been seen to-day on either side of the route. The valley, then, of the Rio de Jemez may be considered as the limit of this formation westward.

The march to-day has been 16.27 miles. The first half of the road was tolerably good; the last half, very rough—the tongue of the six-pounder's limber having been broken on account of it. Not a particle of cultivable soil did we meet with until we reached the valley of the Rio de Chacoli, where we find it rich and mellow. The *sylva* has been generally the dwarf cedar, sparsely scattered; and some pines were observable on the last portion of the route.

Our camping-ground furnished good grazing, tolerable water, and a sufficiency of wood. The water, however, cannot be depended upon, except in the wet season.

There have joined us to-day some eighty Mexican mounted militia. Our force, then, as now constituted, consists of fifty-five men of the regular artillery, one hundred and twenty of the regular infantry, fifty of Mexican volunteer infantry, fifty-five of Pueblo or Indian mounted militia, and eighty of Mexican mounted militia—in all aggregating, with the *employés* of the quartermaster's and subsistence departments, about four hundred men. The longitude of this camp, by observation, is 107° 3′ 15″.

Sixth camp, August 24.—We had some fine showers of rain last evening and during the night.

Seven men belonging to the Mexican mounted militia are reported to have deserted last evening.

The troops resumed the march at 8 a. m.—our course for the day being generally northwest. One and a half miles from camp, we crossed the *Rio de Chacoli*, a running stream, four feet in breadth and a few inches in depth, with banks six feet high, which had to be cut down to give passage to the artillery. This creek traversed, the route lay up a very shallow valley for about three and a half miles, when we got on the brow of the immediate valley of the Rio Puerco—this valley being hemmed in on its west side by heights, with tableau tops, and precipitous escarpment walls. The Rio Puerco, as far as visible, runs a course west of south, and is slightly fringed with the cottonwood. Cerro de la Cabeza and other mountain peaks to the south and west show well from this point. Close by the route, on its right, just before reaching the bed of the Puerco, is an old circular stone *corral* (enclosure) about thirty feet in width, and three in height, laid in mud mortar.

The Rio Puerco, which, from its great length upon the maps, we had conjectured to be a flowing stream of some importance, we found to contain water only here and there, in pools—the fluid being of a greenish, sickening color, and brackish to the taste. The width of its bottom, which is a commixture of clay and gravel, is about one hundred feet. Its banks, between twenty and thirty feet high, are vertical, and had to be graded down to allow the artillery and pack animals to cross them. The six-pounder had to be unlimbered and dragged up on the west side by men at the prolongas. A mule, with one of the howitzers packed on his back, in attempting to traverse the bed of the river, lost his footing and capsized—the howitzer, on account of its great weight, naturally seeking the lowest place, and the legs of the poor animal correspondingly tending upwards. The sight, it may well be conceived, partook both of the painful and the ludicrous.

The valley of the *Rio de Chacoli* and that of the Puerco, both of which, on account of the slight elevation of the dividing ridge, may be considered as but one, and which embraces a breadth of about six miles, is, to all appearances, quite a rich body of land, and, if not ordinarily too dry, must be susceptible of productive cultivation. It differs from the other cultivated soil we have passed over, in being argillaceous, instead of felspatic.

A mile beyond the Rio Puerco, we entered the Cañon de la Copa, (Cup Cañon,) so called on account of the cup or vase-like appearance of some of the sandstone rocks forming its walls. (See sketch in plate 6.) In the left-hand or south escarpment wall of the cañon may be seen some well-defined and beautiful stratification, its dip being slightly *from* the valley of the Puerco, or westward. The breadth of the cañon is about one hundred and fifty yards. Among the escarpment rocks I noticed some seams of a perfectly white saline pulverulent substance, which, from its taste, I should judge to be soda. We also found, in the same locality, in some crevices, and also attached to the rock, a dark pitchy substance, agglutinated with the excrement of birds, and of animals of the rat species.

Near these rocks are several deep and narrow *arroyos*, which required to be worked to make them practicable for the passage of the artillery.

About half a mile further, just as we emerged from the cañon, noticing on the right of the road what appeared to be bituminous coal, I examined it, and found it to be veritably such, though of an impure, slaty character. It exists in beds a foot thick, which are, in some instances, overlaid by yellowish sandstone, and then again by calcareous rock. I noticed, in some instances, superposing the coal, loose, disintegrated masses or fragments of what appeared to be a species of jasper, the evidences of igneous influence being quite apparent from its baked and blackened aspect. The coal, when fractured, occasionally discovers resinous particles of a beautiful iridescent character, the reflections being those of the garnet.

Getting out of the *Cañon de la Copa*, the country becomes very much broken by low hills of a mound or mésa shape, some of them, on account of the symmetry of their form, creating a degree of interest.

From twelve to fifteen miles off, on our left, have appeared, all day, a chain of pretty high mountains, some of them ridgy, and some of mésa shape.

After a march of 13.27 miles, falling upon an insignificant tributary of the Rio Puerco, which drains the valley called *Canada de Piedra de Lumbre*, we have encamped—the pasturage about our camp being but tolerable, the water (of a high clay color) barely endurable, and fuel being found in the vicinity. The water, however, can only be depended upon during the wet season.

The face of the country to day, as usual, has presented pine and cedar, of a dwarf growth, very thinly scattered; and the *artemisia* has been seen everywhere. The soil, excepting the valley of the Rio Puerco, for purposes of cultivation, may be considered as worthless. Astronomical observations put this camp in latitude 35° 46′ 13″.

Seventh camp, August 25.—Three more of the Mexican mounted militia are reported to have deserted yesterday.

The troops took up the line of march at 7 a. m. Our general course for the day has been about northwest. At the start our route lay through a shallow valley—a succession of them, bounded by tableau or rounded hills, crossing each other in every direction, and causing the country to have a broken appearance. A mile or two from camp, looking back, an imposing view of *Cerro de la Cabeza* presented itself to us. There was nothing about it to detract from its towering sublimity; and as the morning sun threw its golden light upon its eastern slope, leaving all the other portions in a softened twilight shade, I thought I had never seen anything more beautiful, and at the same time grand. (See plate 17.)

Four miles on the route, to the left of the road, upon a little hillock, another and more extensive view of the country bursts upon you. To the south, some twenty miles off, lay an extensive range of mountains, of a mésa and ridgy character; intermingled with these, and diversifying the scene, were *Cerro de la Cabeza* and half a dozen other peaks, one of them quite sharp; to the east and northeast were still to be seen, stretching from north to south, from forty to fifty miles off, the Jemez mountains; and everywhere else a broken country, made up of low swelling hills, isolated cones, and mésa heights, sprinkled with pine and cedar of a scrub growth, and with the artemisia, in connexion with an everywhere-prevailing dirty yellowish arenaceous soil, completed the picture.

As we proceeded on, the country stretched out more prairie-like and rolling, furnishing an extensive range of view on every hand. Six miles from our last camp, we met some very dirty, clay-colored water, in pools, the permanency of which, however, cannot be depended on. A mile and a half further, we traversed about one-third of a mile of what appeared to be good argillaceous soil. Four miles from this, a very beautifully-shaped tableau mound appears, ranging directly in front of our course. After a march of thirteen and a half miles, coming upon an arroyo containing some water of a highly-charged clay character, as scanty in quantity as unpalatable to the taste; and, the guide who had been sent in advance not returning in time to give the colonel commanding the information needed in respect to water to make it prudent for him to go any further for the day, the order was given to encamp.

The valley through which the *arroyo* runs is called the *Cañon de Torrijon;* and I notice a few cottonwoods skirting the *arroyo*. The pasturage about camp is but tolerable.

The soil to-day, excepting the very narrow belt already alluded to, is worthless. The road was pretty good.

About sundown, Major Kendrick and myself took a stroll about a mile from camp, in a northwest course, to a tableau mound, where we found, horizontally disposed, an outcrop of bituminous coal, of an indifferent character, on account of earthy admixtures. Sandstone both over and underlies it. We also saw an alternation of thin layers of fibrous gypsum and of arenaceous rock overlying it in places.

The latitude of this camp, by astronomical observations, is 35° 50′ 31″; its longitude, 107° 23′ 45″.

Eighth camp, August 26.—The nights and mornings at the last two camps have been quite cold. This is doubtless owing to our great elevation. We have been ascending more or less ever since we left the Rio Grande. Indeed, from the appearance of the Jemez mountains and other indications, it is not at all unlikely that the country we have been travelling over to-day is considerably higher, atmospherically, than Santa Fe. But this point, it is to be regretted, I cannot determine, for the want of a barometer, with which it was impossible to supply myself on setting out upon the expedition. Major Emory, in his report, speaks of the absence of dew along the *Rio Gila*, and, on that account, of his scarcely ever finding it necessary to wipe his horizon-glass. I, on the contrary, find them so heavy in this region as to make it necessary for me to wipe mine often.

The troops decamped at 7 a. m.—the weather, as it generally has been, being beautiful, clear, and pleasant. Our general course during the day was northwest; and for the first seven miles the route was gradually ascending.

Just after leaving camp, we passed, to the right of the road, the beautifully-shaped mound referred to yesterday. Four miles from camp, on the right of the road, is an oblong mound or hill, about fifty feet high, exhibiting very strikingly the gradual effect of igneous action upon matter, in proportion to its proximity to the source of heat. Highly scoriaceous rocks protruded here and there through argillaceous rocks, burnt to different degrees of calcination; and a dirty yellowish friable sandstone rock crops out all around from underneath the mass. This is the first scoriaceous or lava rock I have noticed since I left the valley of the Jemez. From the mound just adverted to, *Cerro de la Cabeza* and the Jemez mountains could still be seen to our rear.

A mile and a half further on the route we came to a locality where coal crops out of the soil. Near this locality is a very shallow depression or basin, caused by the washing of the rains. In this basin we found some beautiful specimens of petrified wood—in two instances the trunks of the trees still standing erect and *in situ*. One of these trunks was two feet high by two in diameter, and the other three feet high by two and a half in diameter. In another instance, a trunk of a tree, in its petrified state, had fallen over and split open, the parts lying together as if they had but just been cleft with an axe. For a sketch of two of these petrifactions, see plates 18 and 19. Do not these petrifactions show that this country was once better timbered than it now is? All the *sylva* we now find—except the cottonwood occasionally to be seen on the watercourses—is a scrub growth of cedar and pine.

Prescott, in his "History of the Conquest of Mexico," speaking of the absence of forest trees in southern Mexico at the present period, remarks: "In the time of the Aztecs, the table land was thickly covered with larch, oak, cyprus, and the other forest trees—the extraordinary dimensions of some of which, remaining to the present day, show that the curse of barrenness in later times is chargeable more on man than nature."*

If by this remark this favorite author means to say that the curse of barrenness may be chargeable to the wickedness of the people who inhabit it, I can assent to it; but if, on the contrary, his idea is that its inhabitants had caused it by their own spontaneous agency, (positive or negative,) either by acts of devastation or neglect of culture, I do not perceive that a sufficient motive could be assigned to the former; and the history of rich, uncultivated lands in other portions of the world does not, in my judgment, justify the belief of the latter. Surely He who, as Revelation declares, and as the countries of the East now, in connexion with sacred and profane history, attest, "turneth rivers into a wilderness, and the water springs into dry ground; a fruitful land into barrenness, for the

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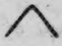
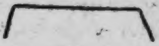
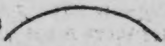
*Volume 1, page 9.—See Isaiah, chapter 24; also, Psalms, chapter 107, verses 33 and 34; in which the Hebrew word, which in the text is rendered "barrenness," is also, according to the marginal reference, convertible into *saltness*; and it is not a little remarkable that the cause of the barrenness of the soil in Old as well as New Mexico, is, in a very considerable degree, if not mainly, owing to this same condition of the earth—its saltness.

wickedness of them that dwell therein;" He who "maketh the earth empty and waste;" who "turneth it upside down, and scattereth wide the inhabitants thereof,"—could also, in His sovereignty, not only have cursed, and for a similar cause, the country in question with the barrenness under which we see it languishing, but by this very means have scattered abroad its inhabitants, as the ruins everywhere attest He has done. It is, however, a pleasing thought, that He who inflicteth such judgments upon the land for the wickedness of the people dwelling therein, also, for their righteousness, "turneth the wilderness into a standing water, and dry ground into water springs; and there maketh the hungry to dwell, that they may prepare a city for habitation, and sow the fields, and plant vineyards, which may yield fruits of increase."* But to resume my journal:

Seven miles from our last camp, we reached the highest point of the land dividing the tributaries of the Gulf of Mexico from those of the Pacific. This land, on all the maps I have seen, is represented as being either of a ridgy, primary character, or of a *mésa* or *tableau* character, its lateral walls in the latter case being represented steep and deep. On some maps it is designated as the *Sierra de los Mimbres*, or in others as the *Sierra Madre*. Our exploration shows that, instead of its exhibiting in traverse section the sharp angles of the primary mountains, thus , or the flat table-shaped aspect of the mesa formation, thus , it presents more strictly the outline of a formation, thus , the country intervening between the far-distant escarpments being very considerably convex.

The highest point of land just referred to reached, we commenced gradually descending its western slope—three miles more bringing us to the Rio Chaco, a tributary of the *Rio San Juan;* and five miles more to a point whence could be seen in the distance, on a slight elevation, a conspicuous ruin, called, according to some of the Pueblo Indians with us, *Pueblo de Montezuma*, and according to the Mexicans, *Pueblo Colorado*. Hosta calls it *Pueblo de Ratones;* Sandoval, the friendly Navajo chief with us, *Pueblo Grande;* and Carravahal, our Mexican guide, who probably knows more about it than any one else, *Pueblo Pintado*.

After having marched 21.45 miles, coming to a spring of good water in a ravine to the left of the road, about a mile from the ruins, in the vicinity of which we found fuel and good grazing, we encamped.

The superior rock to-day was argillo-arenaceous; the soil the same; the route smooth and good. About a dozen hares, half a dozen doves, and one curlew, are all the game I have seen since I left Santa Fe. A wolf is seen occasionally. To-day I saw four; two of them very large.

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*Psalms, chapter 107, verses 35 and 37. See also, in this connexion, Major Emory's report from California, under date of August 20, 1849, to the chief of the Corps of Topographical Engineers, from which I make this extract: "A very remarkable circumstance has occurred in that portion of the country between the mouth of the Gila river and the mountains usually called the 'Desert,' sometimes the 'Jornado.' A river forty feet wide and more than waist deep has appeared in the middle of the desert, affording delicious water to drink, making an oasis at the most convenient spot for the traveller." Surely, then, here is a literal verification of the power of the Almighty to turn "a wilderness into a standing water, and dry ground into water springs."

And I will remark here, that I was informed last summer, by a citizen of Santa Fe, who had then recently travelled the Spanish trail route, that the river had broken out very singularly also upon that route.

After partaking of some refreshments, I started off, with high expectations—my assistants, the Messrs. Kern, accompanying me—to examine the ruins of *Pueblo Pintado*. We found them to more than answer our expectations. (See sketches in plates 20 and 21.) Forming one structure, and built of tabular pieces of hard, fine grained, compact gray sandstone, (a material entirely unknown in the present architecture of New Mexico,) to which the atmosphere has imparted a reddish tinge, the layers or beds being not thicker than three inches, and sometimes as thin as one-fourth of an inch, it discovers in the masonry a combination of science and art which can only be referred to a higher stage of civilization and refinement than is discoverable in the works of Mexicans or Pueblos of the present day. Indeed, so beautifully diminutive and true are the details of the structure as to cause it, at a little distance, to have all the appearance of a magnificent piece of mosaic work. (See plate 41, drawing 1.)

In the outer face of the buildings there are no signs of mortar, the intervals between the beds being chinked with stones of the minutest thinness. The filling and backing are done in rubble masonry, the mortar presenting no indications of the presence of lime. The thickness of the main wall at base is within an inch or two of three feet; higher up, it is less—diminishing every story by retreating jogs on the inside, from bottom to top. Its elevation, at its present highest point, is between twenty-five and thirty feet, the series of floor beams indicating that there must have been originally at least three stories. The ground plan, including the court, in exterior development, is about 403 feet. On the ground floor, exclusive of the outbuildings, are fifty-four apartments, some of them as small as five feet square, and the largest about twelve by six feet. These rooms communicate with each other by very small doors, some of them as contracted as two and a half by two and a half feet; and in the case of the inner suite, the doors communicating with the interior court are as small as three and a half by two feet. The principal rooms, or those most in use, were, on account of their having larger doors and windows, most probably those of the second story. The system of flooring seems to have been large transverse unhewn beams, six inches in diameter, laid transversely from wall to wall, and then a number of smaller ones, about three inches in diameter, laid longitudinally upon them. What was placed on these does not appear, but most probably it was brush, bark, or slabs, covered with a layer of mud mortar. (See plate 41, drawing 5.) The beams show no signs of the saw or axe; on the contrary, they appear to have been hacked off by means of some very imperfect instrument. On the west face of the structure, the windows, which are only in the second story, are three feet two inches by two feet two inches. On the north side, they are only in the second and third stories, and are as small as fourteen by fourteen inches. At different points about the premises were three circular apartments sunk in the ground, the walls being of masonry. These apartments the Pueblo Indians call *estuffas*, or places where the people held their political and religious meetings. For further and more detailed information, including the position of the structure with respect to the four cardinal points, I refer to plate 21½.

The site of the ruins is a knoll, some twenty or thirty feet above the surrounding plain—the Rio Chaco coursing by it, two or three hundred yards distant, and no wood being visible within the circuit of a mile.

The quarry from which the material was obtained to build the structure seems to have been just back of our camp.

Hosta says this pueblo was built by Montezuma and his people, when they were on their way from the north towards the south; that, after living here and in the vicinity for a while, they dispersed, some of them going east and settling on the Rio Grande, and others south into Old Mexico.

The captain of the Mexican mounted militia informs me that twenty of his men have deserted since they joined us on the 23d. The latitude of this camp is found to be 35° 56′ 27″; its longitude, 107° 46′.

Ninth camp, August 27.—Not finishing our examinations at the ruins of *Pueblo Pintado* yesterday afternoon, we again visited them early this morning. On digging about the base of the exterior wall, we find that, for at least two feet, (the depth our time would permit us to go,) the same kind of masonry obtains below as above, except that it appears more compact. We could find no signs of the genuine arch about the premises, the lintels of the doors and windows being generally either a number of pieces of wood laid horizontally side by side, a single stone slab laid in this manner, or occasionally a series of smaller ones so placed horizontally upon each other that, whilst presenting the form of a sharp angle, in vertical longitudinal section, they would support the weight of the fabric above. (See this last indicated in plate 41, drawing 4.) Fragments of pottery lay scattered around, the colors showing taste in their selection and in the style of their arrangement, and being still quite bright. (See plate 22.) We would gladly, had time permitted, have remained longer to dig among the rubbish of the past; but the troops having already got some miles in advance of us, we were reluctantly obliged to quit.

Two miles over a slightly-rolling country, our general course being still northwest, brought us to the commencement of the Cañon de Chaco, its width here being about two hundred yards. Friable sandstone rocks, massive above, stratified below, constitute its enclosing walls. Four miles further, on the right side of the cañon, is a habitation excavated in the rocks, its front wall being of stone and mud masonry. The height of the apartment is four feet; dimensions in plan, fourteen by fourteen feet; and size of doorway, two by two feet. Alongside of it is another small apartment, also excavated in the rocks.

Bituminous coal again makes its appearance, nine miles from our last camp, cropping out from sandstone rocks. A mile further, on the left-hand side of the road, is a stone and mortar enclosure, elliptical in shape, sixteen by eight feet in plan, and having two equal compartments. About a mile further are to be seen a number of very large sandstone boulders, which have tumbled from the rocks above, some of them containing probably as much as fifteen thousand cubic feet. In some instances, I noticed rocks of the same kind *in situ*, and just ready to tumble down. On several of these boulders were found a number of hyeroglyphics—for a representation of which, see plates 23, 24, and 25.

Thirteen miles from our last camp, we came to another old ruin, called by Carravahal *Pueblo Weje-gi*, built, like Pueblo Pintado, of very thin tabular pieces of compact sandstone. The circuit of the structure, including the court, was near seven hundred feet. The number of apartments on the ground floor, judging from what was distinguishable, was probably ninety nine. The highest present elevation of the exterior wall is about twenty-five feet. The great mass of rubbish below, however, shows that it must have been higher. For a sketch of these ruins, in combination with the magnificent amorphous rocks of the north wall of the cañon back of them, see plate 26; and for their ground plan, see plate 27.

The view from these ruins, both up and down the cañon, is fine. Rocks piled upon rocks present themselves on either side, and in such order as to give the idea of two parallel architectural facades, converging at either extremity, at a remote distance. Another and more splendid view burst upon us as we turned an angle of the cañon, just before reaching camp. The chief object in the landscape was *Mésa Fachada*, a circular mound, with tableau top, rising abruptly, midway in the cañon, to a height of from three hundred to four hundred feet. The combination of this striking and beautiful object with the clear sky beyond, against which it was relieved, in connexion with lesser mounds at its base, the serried tents of the command, the busy scene of moving men and animals in the vicinity, and the curling smoke from the camp fires, made up a picture which it has been seldom my lot to witness.

The distance travelled to-day was 14.86 miles. The road was tolerably good. Scrub cedars, very thinly scattered, were to be seen on the heights; and the *artemisia* characterized the *flora*. Some patches of good *gramma* grass could occasionally be seen along the Rio Chaco. The country, as usual, on account, doubtless, of constant drought, presented one wide expanse of barren waste. Frequently since we left the Puerco the soil has given indications of containing all the earthy elements of fertility, but the refreshing shower has been wanting to make it productive. The Rio Chaco, near our camp, has a width of eight feet, and a depth of one and a half. Its waters, which are of a rich clay color, can only be relied upon with certainty during the wet season.

August 28.—This morning, the route of the command deviating from the Cañon of Chaco, in which were represented to be some more ruins of an interesting character, I obtained permission from the colonel commanding to visit them—it being my intention to join the command upon the Chaco, which it was said the troops would strike again before halting for the night. I took with me Mr. R. H. Kern and the guide, Carravahal, seven mounted Mexicans accompanying us as an escort. Mr. E. M. Kern was directed to continue with the troops, and keep up the topography of the route.

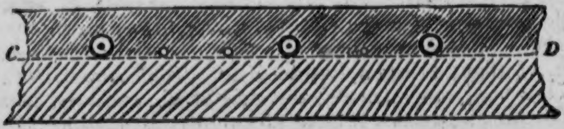
Proceeding down the cañon one and a half miles, (its general course north west by west,) we came to an old ruined structure, called by Carravahal *Pueblo Una Vida*. The circuit of this pueblo we found on measurement to be nine hundred and ninety-four feet. The structure has been built, like those I have already described, of very thin tabular fine-grained sandstone—the highest present elevation of the main walls being about fifteen feet. Two stories are now discoverable, but the mass of *debris* at the base of the walls certainly shows that there must originally have been more. The remains of four circular *estuffas* are still apparent. For a view of these ruins, with the beautiful *Mésa Fachada* in the distance, see plate 28; and for a view of the plan of the pueblo, so far as it was distinguishable, see plate 29.

A mile further down the cañon, we came to another pueblo in ruins, called by Carravahal *Hungo Pavie*, which he interprets Crooked Nose. These ruins show the same nicety in the details of their masonry as those I have already described. The ground plan (for which see plate 30) shows an extent of exterior development of eight hundred and seventy-two feet, and a number of rooms upon the ground floor equal to seventy-two. The structure shows the existence of but one circular *estuffa*, and this is placed in the body of the north portion of the building, midway from either extremity. This *estuffa* differs from the others we have seen, in having a number of interior counterforts. The main walls of the building are at base two and three-quarter feet through, and at this time show a height of about thirty feet. The ends of the floor beams, which are still visible, plainly showing that there was originally, at least, a vertical series of four floors, there must then also have been originally at least a series of four stories of rooms; and as the *debris* at the base of the walls is very great, it is reasonable to infer that there may have been even more. The floor beams, which are round, in transverse section, and eleven inches in diameter, as well as the windows, which are as small as twelve by thirteen inches, have been arranged horizontally, with great precision and regularity. Pottery, as usual, was found scattered about the premises—specimens of which are illustrated in plate 32.

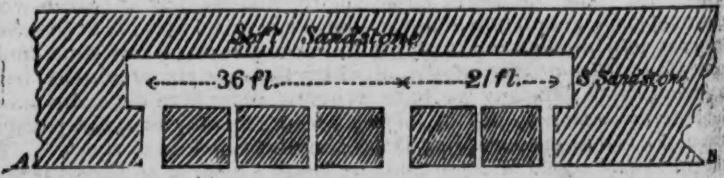
Continuing down the cañon one and three quarter miles further, we came to another extensive structure in ruins, the name of which, according to the guide, is *Pueblo Chettro Kettle*, or, as he interprets it, the Rain Pueblo. These ruins have an extent of exterior circuit, inclusive of the court, of about thirteen hundred feet. The material of which the structure has been made, as also the style of the masonry, is the same as that of the ruined pueblos I have already described—the stone a sandstone, and the beams pine and cedar. The number of stories at present discoverable is four—there having been originally a series of windows (four and a half by three and a half feet) in the first story, which are now walled up. The number of rooms on the first floor, all of which were distinguishable, excepting those in the west wing, must have been as many as one hundred and twenty-four. (See ground plan of structure in plate 33.) The circular *estuffas*, of which there are six in number, have a greater depth than any we have seen, and differ from them also in exhibiting more stories, one of them showing certainly two, and possibly three, the lowest one appearing to be almost covered up with *debris*. In the northwest corner of these ruins we found a room in an almost perfect state of preservation, a sketch of which can be seen in plate 34. This room is fourteen by seven and a half feet in plan, and ten feet in elevation. It has an outside doorway, three and a-half feet high by two and a quarter wide, and one at its west end, leading into the adjoining room, two feet wide, and at present, on account of rubbish, only two and a half feet high. The stone walls still have their plaster upon them, in a tolerable state of preservation. On the south wall is a recess, or niche, three feet two inches high by four feet five inches wide by four feet deep. Its position and size naturally suggested the idea that it might have been a fireplace; but if so, the smoke must have returned to the room, as there was no chimney outlet for it. In addition to this large recess, there were three smaller ones in the same wall. The ceiling showed two main beams, laid transversely; on these, longitudinally, were a number of smaller ones in juxta position, the ends being tied together by a species of wooden fibre, and the interstices chinked in with small stones; on these again, transversely, in close contact, was a kind of lathing of the odor and appearance of cedar—all in a good state of preservation. Depending from the beams were several short pieces of rope, a specimen of which I got. The floor of the room is covered with rubbish. A large quantity of pottery lay strewed about the ruins.

Two hundred yards further down the cañon, in its north wall, are to be seen, about twelve feet from the ground, upon the same level, and within a number of feet of each other, three horizontal perforations, each about two feet in diameter, and having smaller ones between them, on the same line of level. Besides these perforations, there were other small ones arranged in a vertical line from the ground to one of the larger ones. What the object of these perforations may have been, it is difficult to divine, unless, indeed, back of the larger ones, and extending from one to the other, is an excavation which may answer as a hiding-place—the small orifices on the same level serving for light and ventilation, and those extending from the ground to one of the large ones as means of ascent, thus :

Elevation on C D, or face of wall.



Horizontal section on A B, or plan of excavation.



And this conjecture agrees with the statements made by one of the Mexicans with me, that it was a *casa*, (house.) It is to be regretted, however, that the want of the proper appliances to insert in the holes as steps for ascent, together with the necessity of hurrying on to the other labors of the day, did not permit us to satisfy our minds upon this point. Below the perforations on the face of the rock were a number of hieroglyphics, which are represented in part in plate 35, some fragments of the drawings having become lost.

Two or three hundred yards down the cañon, we met another old pueblo in ruins, called Pueblo Bonito. For a distant view of these ruins, and the magnificent rocks back of them, see plate 36; and for a view of its north elevation, see plate 39. This pueblo, though not so beautiful in the arrangement of the details of its masonry as *Pueblo Pintado*, is yet superior to it in point of preservation. The circuit of its walls is about thirteen hundred feet. Its present elevation shows that it has had at least four stories of apartments. The number of rooms on the ground floor at present discernable is one hundred and thirty-nine. In this enumeration, however, are not included the apartments which are not distinguishable in the east portion of the pueblo, and which would probably swell the number to about two hundred. There, then, having been at least four stories of rooms, and supposing the horizontal depth of the edifice to have been uniform from bottom to top, or, in other words, not of a retreating terrace form on the court side, it is not unreasonable to infer that the original number of rooms was as many as eight hundred. But, as the latter supposition (as will be shown presently) is probably the most tenable, there must be a reduction from this number of one range of rooms for every story after the first; and this would lessen the number to six hundred and forty-one. The number of *estuffas* is four – the largest being sixty feet in diameter, showing two stories in height, and having a present depth of twelve feet. All these *estuffas* are, as in the case of the others I have seen, cylindrical in shape, and nicely walled up with thin tabular stone. Among the ruins are several rooms in a very good state of preservation—one of them (near the northwest corner of the north range) being walled up with alternate beds of large and small stones, the regularity of the combination producing a very pleasing effect. (See drawing No. 2, plate 41.) The ceiling of this room (see plate 38) is also more tasteful than any we have seen—the transverse beams being smaller and more numerous, and the longitudinal pieces which rest upon them only about an inch in diameter, and beautifully regular. These latter have somewhat the appearance of barked willow. The room has a doorway at each end and one at the side, each of them leading into adjacent apartments. The light is let in by a window, two feet by eight inches, on the north side. There was among the ruins another room, which, on account of the lateness of the hour and the consequent despatch of our examination, escaped our scrutiny. This room having been represented by Assistant Surgeon J. H. Hammond and Mr. J. L. Collins (both of whom started from camp with us) as being more perfect in its details than any of the others we had visited, and as indicating the use of *smooth* plank in the flooring, I requested the former to furnish me with a description of it. This description (thanks to the courtesy of the doctor) will be found in the appendix "C."

Besides the ruins of the main structure, there were some others lying just to the northeast of the pueblo, along the wall of the cañon.

A few hundred yards further down the cañon, we fell in with another pueblo in ruins, called by the guide *Pueblo del Arroyo*, the circuit of which was about one hundred feet. The day, however, being far gone, and the camp of the command doubtless many miles in advance of us, we were obliged reluctantly to forego the critical examination of these ruins which we would have been pleased to give them.

About a quarter of a mile further, we came to another small ruined edifice; and half a mile further, to still another—the style and construction of each being the same as of those already described, except that the stones of the walls were a little larger.

All the ruins we have seen to-day, up to this point, have been on the north side of the cañon, and within a few feet of its escarpment wall, the sandstone rocks composing it being magnificently amorphous, and running up to a height of about one hundred feet. Two miles further down the cañon, but on its left or south bank, we came to another pueblo in ruins, called by the guide *Pueblo de Peñasca Blanca,* the circuit of which I ascertained to be, approximately, one thousand seven hundred feet. This is the largest pueblo in plan we have seen, and differs from others in the arranagement of the stones composing its walls. The walls of the other pueblos were all of one uniform character in the several beds composing it; but in this there is a regular alternation of large and small stones, the effect of which is both unique and beautiful. The largest stones, which are about one foot in length, and one half a foot in thickness, form but a single bed, and then, alternating with these, are three or four beds of very small stones, each about an inch in thickness. (See drawing No. 2, plate 41, for an illustration of this style of masonry.) The general plan of the structure also differs from the others in approximating the form of the circle. The number of rooms at present discoverable upon the first floor is one hundred and twelve; and the existing walls show that there have been at least three stories of apartments. The number of circular estuffas we counted was seven.

The question now arises, as we have seen all the ruins in this quarter, What was the form of these buildings?—I mean as regards the continuity or non-continuity of its front and rear walls. Were these walls one plain surface from bottom to top, as in the United States, or were they interrupted each story by a terrace, as is the case with the modern pueblo buildings in New Mexico?

The front or exterior walls were evidently one plain surface from bottom to top; because, whenever we found them in their integrity, which we did for as many as four stories in height, we always noticed them to be uninterruptedly plain.

The rear walls, however, were, in no instance that I recollect of, found to extend higher than the commencement of the second story; and the partition walls were, if my memory is not at fault, correspondingly steplike in their respective altitudes. The idea, then, at once unfolds itself, that in elevation the inner wall must have been a series of retreating surfaces, or, what would make this necessary, each story on the inner or court side must have been terraced. This idea also gathers strength from the fact that we saw no indications of any internal mode of ascent from story to story, and therefore that some exterior mode must have been resorted to—such as, probably, ladders, which the terrace form of the several stories would make very convenient. Again, the terrace form of the stories would best conduce to light and ventilation for the interior ranges of apartments. The idea, then, which Mr. R. H. Kern was the first to suggest—that these pueblos were terraced on their inner or court side—is not without strong grounds of probability; and it is in consonance with this idea that, in his *restoration* of the *Pueblo Hungo Pavie,* (see plate 31,) he has given it the form exhibited in the drawing.*

It is a curious fact, that in no single instance did we find in these ruins either a chimney or a fireplace, unless, indeed, the recesses described as existing in some of the rooms were used as fireplaces, which their slight height, as well as deprivation of chimney flues, would scarcely authorize. Neither were there any indications of the use of iron about the premises.

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*Unwittingly Mr. Kern has fallen one story short of the number the ruins exhibited. In their restored state, four stories should appear.

In regard to the position of the several structures in respect to the four true cardinal points of the heavens, it deviated in every instance more or less from them; but in no instance was the variation from the *magnetic* cardinal points more than five degrees, except in the case of the *Pueblo Una Vida*, where it was as great as fifteen degrees east. The magnetic variation of the needle from the true pole being, at these localities, about thirteen and a half degrees east, the deviation from the four *true* cardinal points, in the case of the *Pueblo Una Vida*, would then be as much as twenty-eight and a half degrees. In the case, however, of all the other pueblos, it was but a very few degrees.

In regard to the origin of these remains, there is nothing that I can learn conclusive in relation to it. Hosta, one of the most intelligent Pueblo Indians I have seen, says, as I have before remarked, that they were built by Montezuma and his people, when on their way from the north to the region of the Rio Grande and to Old Mexico. Sandoval, a very intelligent Navajo chief, also says they were built by Montezuma, but further states that the Navajos and all the other Indians were once but one people, and lived in the vicinity of the Silver mountain; that this mountain is about one hundred miles north of the Chaco ruins; that the Pueblo Indians separated from them, (the Navajos,) and built towns on the Rio Grande and its tributaries, but that "their house continues to be the hut made of bushes." Nothing more satisfactory than this have I been able to get from either Indians or Mexicans.

On Colton's map of North America, however, I notice that Humboldt is made to locate the residence of the Aztecs, in the twelfth century, between the thirty-sixth and thirty-seventh parallels of north latitude, and the one hundred and ninth and one hundred and twelfth meridians of west longitude; but upon what ground the great explorer has based this hypothesis, I know not, for I have not his works at hand to consult. This thing, however, is certain: the ruins I have described were found upon the Rio Chaco; they are evidently, from the similarity of their style and mode of construction, of a common origin; they discover in the materials of which they are composed, as well as in the grandeur of their design and superiority of their workmanship, a condition of architectural excellence beyond the power of the Indians or New Mexicans of the present day to exhibit; and they are all situated between the thirty-sixth and thirty seventh parallels of north latitude, and near the one hundred and eighth degree of west longitude. It is, then, not at all improbable that they are the identical ruins to which Humboldt has referred.

But it may be said, "It is true these remains discover a race of men superior to the natives of New Mexico of the present day; but where are the evidences of the very high stage of civilization to which the Aztecs are said by historians to have attained in Anahuac? Where are the evidences of a mechanical knowledge equal to that which must have been exercised in the construction of the temple of Xochicalco, the palaces of Tezcotzinco, and the colossal calender stone in the capital."* But, waiving the question whether these remains are not of Toltec, rather than of Aztec origin, or of an origin yet more remote, is it at all an impossible thing that a people who could show the ingenuity and skill which the ruins of Chaco attest could also, self-instructed, by the time of the Spanish conquest, or within the space of three centuries, (the interval between the twelfth and fifteenth centuries,) have made such advances in the mechanic arts as to be equal to the work in question? And still further, is it not very likely that, as history bases the advanced state of the arts among the Aztecs of Anahuac more upon the superior attainments of their predecessors, the Toltecs, and their contemporaries, the Tezcucans,* than upon their own spontaneous, self-instructed efforts—is it not very likely, I say, that, under such favorable auspices, the Aztecs could have attained to the degree of proficiency ascribed to them? The foregoing facts and reflections, it is true, do not with certainty *fix* an Aztec origin to the ruins of the Chaco; but they go to show that, as far as is known, there is nothing to invalidate the hypothesis, but, on the contrary, a great deal to make it probable.

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* Prescott's Conquest of Mexico, vol. I, pp. 142, 182–185; vol. II, Ap., part I, note 73.

Gregg, in his excellent work upon New Mexico, entitled "Commerce of the Prairies,"† speaking of one of the Chaco ruins, *Pueblo Bonito*, remarks, (most probably from information derived from others,) that it resembles so much those of *Casas Grandes* as to make it probable that they were originally built by the same people; and, as he seems to adopt the idea of the historian *Clavigero*, that these latter *are* of Aztec origin, the inference is, that he also attributes the former to the same source. Wislizenus, on the contrary, in his interesting "Memoir of a Tour to Northern Mexico in 1846 and 1847,"‡ says, (he professes only to speak from report,) that the ruins of *Casas Grandes* are "built of *adobes* and wood squared," and have "a gallery of wood and staircase from the outside." If, then, the information derived by Wislizenus be correct, these ruins cannot be said to resemble those of the Chaco, for the latter are built *entirely of stone*, and, besides, do not discover the *slightest evidences* of ever having had exterior "galleries" or staircases. It is most probable, then, that they are not both of the same, or of Aztec origin; but as, with Mr. Gallatin, I am inclined to doubt the Aztec origin of the former, or those of *Casas Grandes*, so am I equally strong in the opinion that those of the latter, the Chaco ruins, are of that origin.

Major Emory also, in his letter to Mr. Gallatin, (to be found in appendix No. 1 of his "Reconnaissance in New Mexico,") speaking of the ruins on the *Rio Gila*, says: "My own impression is, that the many ruins we saw on the Gila might well be attributed to Indians of the races we saw in New Mexico, and on the Gila itself. I mean by the last the Pimos, who might easily have lost the art of building *adobe* or mud houses." It would then seem to be very probable that not only were the ruins of the Chaco of Aztec origin, but, as far as has been at present discovered, it is not at all unlikely that they, instead of those on or near the Gila, constituted the last resting place of this people before entering upon the conquest of Anahuac.

The great historian Robertson, it is said, has stated (I have not his works near me to verify the fact,) that "there is not in all the extent of

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* Prescott's Conquest of Mexico, vol. 3, pp. 215, 216, 414.
† Vol. 1. pp. 283-285.
‡ Page 59.

New Spain any monument or vestige of a building more ancient than the conquest; that the temple of *Cholula* is nothing but a mound of solid earth, without any facing, or any steps, covered with grass and shrubs; and that the houses of the people of Mexico are mere huts, built with turf or branches of trees, like those of the rudest Indians."* However applicable this may be to the ancient remains said to have been found in New Spain—and I have no reason, from my reading, to believe it so—it certainly cannot be predicated of those discovered on the Rio Chaco.

But to proceed with the journal of our route: The last ruins passed, we obtained from the same eminence on which they are situated a fine view of the *Tumecha* mountains, some forty miles off, to the west, and their apparent range very nearly perpendicular to our course, and the waters of the Chaco, glittering under the rays of an opposite and declining sun, coursing their way as far as they could be seen towards them. Already it was 5 o'clock p. m., and no signs of the camp of the troops were visible. Thirteen miles more were made by us—the darkness of the night having come upon us—and still the camp was not in view. Just at this moment, a strange horse neighed directly in front of us. I felt assured that we had at last reached the camp. An exclamation of joy from me was the natural consequence; and I cried out loud enough to get a response from it, if such it was. All, however, was as silent as death. The thought then flashed upon me, we have perchance got into a Navajo snare, and I prepared my firearms accordingly. The sergeant, however, soon ascertained that the horse was an American one, and had a *lariat* (a long halter) upon him. This at once gave me the idea that the camp, if not just at hand, could not be far off. I therefore again gave the word, "Forward." We had, however, not gone more than fifty yards before I heard a voice calling out, within but a few yards of me, "Simpson! Simpson! come over here." Over an intermediate stream I went, and who should I find stretched out for a night's repose but Doctor Hammond! It appears that the doctor and Mr. Collins, both of whom had preceded us from the ruins in search of camp, had, up to this point, not fallen in with it; and the former believing that it would be better to wait where he was for the troops, and the latter that it was preferable to strike off south from the river in search of them, they had both acted correspondingly—the doctor spreading out his horse-blanket and overcoat as a pallet for the night, and Mr. Collins taking off with him the two or three Pueblo Indians they had had in company with them. Of course, this accidental meeting was congratulatory on both sides: and particularly fortunate was it for the doctor that he was awake to hail us as we were passing; for had it been otherwise, his horse, which one of the escort was taking away with him, would have been found missing in the morning, and he, consequently, in rather a helpless plight.

Judging from the information given me by the guide that the country admitted of the commands striking the Chaco about two miles lower down, (which it will be recollected I was told before leaving camp they would do before encamping,) the doctor consenting to accompany us, we pushed on that distance, but only to be again disappointed. The consequence was, that we were obliged to come to a halt and bivouac for the night. Not anticipating anything of this kind when we left the troops, neither Mr. Kern, the doctor, nor myself had brought with us any provisions or bed clothing. The Mexicans, however, kindly shared their *atole* (a sort of thin mush) with us; and, clubbing our horse-blankets and overcoats together, our saddles serving as pillows, we prepared for ourselves a tolerably comfortable bed.

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* See Museum of Foreign Literature and Science, Philadelphia, vol. VII, page 166.

The whole distance travelled to-day was about twenty-three miles; and, considering the amount of labor we accomplished at the ruins, we look upon our day's work as being considerable.

The soil in the *Cañon de Chaco*, though now very arid, seems to possess the elements of fertility; and, probably, when the ruined pueblos along it were instinct with life, it was cultivated. The water of the Rio Chaco has been gradually increasing in volume in proportion as we descended. The flora and sylva have been, as usual, the artemisia and a stunted growth of cedar, the latter here and there sparsely disposed on the table lands.

Eleventh camp, August 30.—All had a good night of it, notwithstanding our untoward circumstances. The Mexicans again, from their little stock, furnished us with a sufficiency to cause us to feel that we had a breakfast. Believing that we were in advance of the troops, and that, therefore, they would meet us, I determined to wait for them where we were. In the mean time, I examined the geological structure of the rocks forming the enclosing walls of the cañon. Beginning at the base and proceeding upwards, I found, first, a bed of impure bituminous coal five feet thick; next, a stratum of argillaceous earth twelve feet thick; next, two feet of argillaceous rock of a reddish ferruginous aspect, presenting evidences of induration by heat; and last, forming the crowning rock of the whole, an amorphous yellow sandstone, interstratified with gray argillaceous shale, of about two feet in thickness. Upon the *talus* of the escarpment I picked up also some fragments of selenite. The formation just described has characterized the country generally ever since we left the *Rio Puerco*.

Between 10 and 11 o'clock a. m., Carravahal, who had gone with my reconnoitring-glass up the neighboring *mésa* height to look out for the command, giving a shout, we were at once convinced that some person or persons were approaching. And, sure enough, not many minutes elapsed before we noticed Mr. Collins coming down the cañon with a party of fifteen Indians. He had come to look us up, and supply us with something to eat. Last night, after a hard ride, he had fallen in with the main camp, some ten miles south from the river. *Sandoval*, the Navajo guide with the command, it appeared, had either honestly changed his mind about striking the Rio Chaco, or his intentions had unwittingly been misinterpreted, or he had in view something sinister. But, be this as it may, we again started off to find the troops at their next camp—our course continuing to be, for the first ten miles, as yesterday, northwest by west, and immediately down the cañon. Having proceeded five and a half miles, we passed a mound, which, the Indians perceiving, they rushed towards in a mass, to provide themselves with some of the red paint which crops out near its summit. It was not many minutes before they came dashing upon us again, their faces totally coated with paint, and with them a Mexican, having, not only his face, but the sleeves of his shirt, of a deep red color; and soon after I noticed, not only this fellow's entire clothing, but even his mule's head, of this barbarous complexion—the object being, doubtless, to give him the ferocious, bloody look which, in his soul, probably, he felt he could testify in no other way. About this locality were some fresh foot tracks visible, supposed to be those of Navajo spies who had been dogging us. A mile further, we came to a hemispherical mound, fifteen feet high, and of about fifty feet base. At the base, coal crops out. Immediately above is a blue rock, apparently argillo-calcareous, two feet thick, blackened as if by fire. Above this, and forming the chief covering, is a grayish-white pulverulent mass, intermingled with fragments of red argillaceous rock, also showing marks of heat; and immediately at the apex, or summit, are fragments of the same kind of rock, highly scoriaceous. Is it not reasonable to presume that here has been a slight upheave from below, attended with fusion—indeed, a volcano on a small scale?

Leaving the cañon at a point about ten miles from our place of bivouac, we struck a general course south of west—the country for the next ten miles being a barren waste of broken hills and arid plains, and some of the hills being so steep as to require us to lead our horses down them, and even then at the risk of their limbs—the soil of the plains presenting very much the levity and color of ashes, and looking, if possible, more under a *curse* than the generality of that we have passed over. This distance traversed, we got in the midst of a most singular profusion and confusion of deep, rugged ravines, and high sandstone rocks, of almost every shape and character imaginable. Here were at once to be seen domes, pillars, turrets, pinnacles, spires, castles, vases, tables, pitched roofs, and a number of other objects of a well-defined figurative character, specimens of two of which will be seen in plate 42. The base of these formations is an argillaceous friable rock.

At length, reaching the brow of the Tumecha valley, much to our joy, we could see in a direction south of west the camp of the troops, some seven or eight miles off, the tents appearing at times like white specks, and cheering us by the peaceful blue smoke with which they were canopied. The intermediate plain, of an ash-colored, herbless, forbidding character, rapidly traversed, it was not long before we were entering camp, much to the gratification of our comrades, who, it appeared, had felt no little anxiety on our account, and greatly to our own satisfaction.

Our day's travel has been about twenty-nine miles. The water at this camp, of a highly alkaline character, is obtained from dug pits. Wood of a shrub or bush character is used for fuel. There being no grass near, fodder is obtained from the green cornfields of the Navajos in the vicinity.

Mr. E. M. Kern having been directed, on my diverging from the route of the troops, to keep up the topography of the country through which they would pass, the following is his journal for the two days we have been separated:

"*Tenth camp, August* 28.—Raised camp at 7 o'clock. General course west. About nine miles from our camp of last night, on our left, about three miles distant, appeared the ruins of an old pueblo. The *mésa* that formed the left side of the Cañon de Chaco turns off square opposite the Mésa Fachada, and runs in a southerly direction, leaving on our left a plain, slightly broken by gullies and isolated hills.

"The road to-day has been very interesting on account of the curious sandstone formations, having much the appearance of a large ruined city. These places rendered the road somewhat difficult. Camped to-night at some pools of water, sufficient for the camp. Petrified wood along the river. Made 24.50 miles.

"*Eleventh camp, August* 29.—Moved at 7 o'clock. The artillery, at about three-fourths of a mile, turned a short distance to the left to avoid a bad ascent of the mésa. The country of the same character as of yesterday, but road better. A few uninteresting ruins of old houses in the rocks. Broken bluffs on the right. Camped at some Indian wells. Made 14.60 miles. No vegetation to speak of for the past two days."

Astronomical observations give for the latitude of this camp 36° 04′ 35″; for the longitude, 108° 39′ 30″.

Twelfth camp, August 30.—Several Navajo men and women were yesterday afternoon and this morning in our last camp. They said the troops had come over sooner than they had expected; that their people were yet living on their cornfields near by; and that they had collected some fifteen horses and mules, and a number of sheep, to deliver up, according to the requirements which the colonel commanding had made of them, through Brevet Major Grier, some weeks previous, at Jemez; that they would conform to the treaty which Colonel Nuby had made with them; did not want to fight, &c.

The women I noticed wore blankets, leggins, and moccasins—the blankets being confined about the waist by a girdle. They bestrode their horses *a la mode des hommes*. One of them, on horseback, had a child at her breast, confined on its back to a board, the upper portion canopied by a frame of willow-work, to protect its head from the weather.

The troops decamped this morning at seven—their course, which was up the valley of the Tumecha, being generally about northwest. Having proceeded five and a half miles, a most splendid view of the peaks of the Ojos Calientes (Warm springs) presented itself to our front. This view may be seen in plate 43—several Navajos, in costume, being exhibited in the foreground, gazing at the troops in the distance beyond. These splendid peaks first appeared to view yesterday, from the brow of the Tumecha valley. Two miles further, another body of Navajos appeared in front of us, about a mile distant, who, as we approached, discovered themselves to be mounted. Soon the Pueblo Indians, who were in the advance, were scampering off to commingle with them; and, dressed as they all were in their costumes, they formed quite an interesting and formidable group. Several of the Navajos, I noticed, wore helmet-shaped caps, which were in some instances heightened in picturesque effect by being set off with a bunch of eagles' feathers.

One of them, I observed, had hair approaching to red, and looked, as was observed by several, very much like a white man painted. Another man, who was quite old, and of very large frame, had a grave and contemplative countenance, not unlike, as many of the officers remarked, (I hope the comparison will be pardoned,) that of General Washington. Some of them were almost naked—one of them entirely so, excepting his breech-cloth, his whole person at the same time looking ghastly, on account of a kind of whitewash with which it was covered.

Colonel Washington and his staff having remained among the group sufficiently long to enable the main body of the troops to come up, the word was given by him, "Tell Sandoval to direct these people to go forward!" Soon I could see the whole body of Indians (Pueblos and Navajos) moving in a cloud of dust in advance of us. A dark, portentous cloud was hovering at the time over the Tumecha mountains beyond, the forked lightning ever and anon darting vividly athwart it; the beautiful peaks of the Ojos Calientes lay quartering to the right; and in rear could be seen the main command—first the packs, then the infantry, and last the artillery, (which, on account of some obstacle, had for the moment got behind,) coming forward.

Fifteen miles on our route, we came to a hill, about fifty feet high, up which the artillery was drawn with some difficulty. Six miles further brought us to the Rio Tumecha, (a primary or secondary tributary of the San Juan,) upon which we are now encamped.

The peaks of the Ojos Calientes, as we approached them to-day, appeared very much like ships under full sail—two of them looking very rakish, and the other more upright, as if moved by a gentle breeze.

We passed along the route some very extensive and luxuriant cornfields, the plant looking finer than any I have seen in this country; and what makes it more remarkable, at least in this part of the world, is, there were no evidences of a resort having been had to irrigation. The soil was arenaceous and light, the ears of the plant springing low down from the stalk, and looking sometimes as if they came directly from the soil. Colonel Washington informs me that the latter is probably owing to the deep planting, which the Navajos practice more than other Indians. They plant as deep as a foot or a foot and a half, and he has been assured that they never fail in their crops. This kind of planting, however, I suppose, can only be successful in light, porous soils.

The water in the Rio Tumecha we find amply sufficient and good, and doubtless its constancy may be relied on. The pasture along the stream, however, is but scant, and therefore the cornfields of the Navajos in the vicinity have to be drawn upon. It having been represented that the Navajos would resist the troops in cutting the corn, Captain Dodge, with a command. was sent to enforce the order.

This afternoon, several of the head-men of the Navajo tribe have been in camp, and had a talk with Colonel Washington and the Indian agent, Mr. Calhoun—the object of these gentlemen being to inform them that the troops were there in accordance with the determination made known to them some weeks since at Jemez; that, if they did not comply with the treaty made with them by Colonel Nuby, which required that they should give up all Mexican captives, all murderers of Mexicans who had secreted themselves among them, and all Mexican stock they had driven off since the establishment of the government of the United States over them, the United States would send among them a body of troops to enforce it. The result of the conference was, that the chiefs present promised to send word out to all the other chiefs, who, they said, would be in camp to-morrow at noon, to hold a council with the United States, and have matters settled.

The latitude of this camp, by observation, is 36° 12′ 59″; the longitude, 108° 50′ 45″.

Thirteenth camp, August 31.—To-day, about noon, at our last camp, three Navajo chiefs appeared in council—Narbona, José Largo, and Archulette—when something like the following colloquy took place, the interpreter, Mr. Conkling, of Santa Fe, delivering the several points *seriatim*, as they were expressed by Colonel Washington and Mr. Calhoun:

Colonel Washington. Tell them that I wish them to go to Chelly, so that a treaty may be made with the whole nation.

Tell them the treaty I wish to make with them is to establish the conditions they promised yesterday to comply with.

Tell them the treaty I propose to make with them will be based upon the demands I have already made; and the object, in addition, will be a permanent peace.

Mr. Calhoun. Tell them they are lawfully in the jurisdiction of the United States, and they must respect that jurisdiction.

Interpreter. They say they understand it.

Mr. Calhoun. Tell them that, after the treaty is made, their friends will be the friends of the United States, and their enemies the enemies of the United States.

Tell them, when any difficulty occurs between them and any other nation, by appealing to the United States they may get redress.

Are they willing to be at peace with all the friends of the United States?

Interpreter. They say they are willing.

Mr. Calhoun. Tell them that, by the treaty which it is proposed to make with them, all trade between themselves and other nations will be recognised as under regulations to be prescribed by the United States.

Colonel Washington. And the object of this is to prevent their being imposed upon by bad men.

Interpreter. They understand it, and are content.

Mr. Calhoun. Tell them, if any wrong is done them by a citizen of the United States, or by a Mexican, he or they shall be punished by the United States as if the wrong had been done by a citizen of the United States, and on a citizen of the United States.

Interpreter. They say they understand it, and it is all right.

Mr. Calhoun. That the people of the United States shall go in and out of their country without molestation, under such regulations as shall be prescribed by the United States.

Interpreter. They say, very well.

Mr. Calhoun. Tell them that, by this treaty, the government of the United States are to be recognised as having the right to establish military posts in their country wherever they may think it necessary, in order to the protection of them and their rights.

That the government of the United States claim the right to have their boundaries fixed and marked, so as to prevent any misunderstanding on this point between them and their neighbors.

Interpreter. They say they are very glad.

Mr. Calhoun. For and in consideration of all this, and a faithful performance of the treaty, the government of the United States will, from time to time, make them presents, such as axes, hoes, and other farming utensils, blankets, &c.

Interpreter. They say it is all right.

The several points of the proposed treaty having been explained to the chiefs to their satisfaction, Narbona, the head chief, and José Largo, both very aged—the former about eighty, and the latter about seventy—voluntarily signed powers of attorney, by which full authority was granted to Armijo and Pedro José, two younger chiefs, to act for them at Chelly in the proposed council, in the same manner and to the same extent as they would do were they present.

The council breaking up, Sandoval harangued some two or three hundred Navajos, ranged before him on horseback—the object, as it occurred to me, being to explain to them the views and purposes of the government of the United States. Sandoval himself habited in his gorgeously-colored dress, and all the Navajos as gorgeously decked in red, blue, and white, with rifle erect in hand, the spectacle was very imposing. But soon I percieved there was likely to be some more serious work than mere talking. It appears that it was ascertained very satisfactorily that there was then among the horses in the possession of the Navajos present one which belonged to a Mexican, a member of Colonel Washington's command. The colonel, particularly as the possessor of it acknowledged it to be stolen, demanded its immediate restoration. The Navajos demurred. He then told them that, unless they restored it immediately, they would be fired into. They replied that the man in whose possession the horse was had fled. Colonel Washington then directed Lieutenant Tores to sieze one in reprisal. The Navajos, immediately perceiving it, scampered off at the top of their speed. The guard present were then ordered to fire upon them—the result of which was, that their head chief, Narbona, was shot dead on the spot, and six others (as the Navajos subsequently told us) were mortally wounded. Major Peck also threw among them, very handsomely—much to their terror, when they were afar off, and thought they could with safety relax their flight—a couple of round shot. (See plate 31 for a sketch of Nabona, taken just before his death—the scourge of the Mexicans, doubtless, for the last half century.)

These people evidently gave signs of being tricky and unreliable, and probably never will be chastened into perfect subjection *until troops are stationed immediately among them.*

They had, previous to the affray, during the day, brought in about one hundred head of sheep, and four horses and mules; and immediately after it, some thirty or forty more head of sheep were driven in by the troops.

It is to be regretted that, in the hurry-skurry movement of the enemy, some of the pack animals, which were at the time ready to accompany the troops to the next camping ground, should have been frightened off.

Immediately after the affair alluded to, at about 5 p. m., the command resumed the line of march. We had not proceeded more than a mile before a Navajo appeared ahead of us, as if anxious to hold a parley. Mr. Conkling was sent forward to see what he wanted. He said he wished to talk to the commanding officer. Colonel Washington told him to come forward. He did so; and, with tears in his eyes, (I do not know how easily these fellows may cry,) he said he did not wish to live any longer among these people; that he wanted peace; that he was related to Sandoval, and wished to convey his mother to Sandoval's people,* among whom he desired to live. The colonel told him to go home and keep the peace; that he was at liberty to convey away his mother.

Our march this afternoon was only 4.32 miles. The soil of the valley we have been threading for the last two days, it occurs to me, is (a great deal of it) good, and could doubtless be cultivated much more extensively than it is.

General character of the country traversed east of the Sierra de Tumecha.

And now, as we shall commence the ascent to-morrow of the *Sierra de Tumecha*, which traversed, according to the report of one of the guides, is to introduce us into a more fertile region, the opportunity seems to be a favorable one for summing up, in *one general view*, the several characteristics of the country we have been passing through since we left Santa Fe.

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*Sandoval is the recognised chief of a small number of friendly Navajos, living near Cebolleta, on the head-waters of the San José. (See map.)

The geological features of the country have been, from Santa Fe to the Rio Jemez, an intermixture of primary and secondary mountains, and mésa or table heights—the latter for the most part being overlaid with basaltic trap. From the valley of the Rio de Jemez to where we now are, (or to the Sierra de Tumecha,) the formation is entirely of a secondary character, the superior rocks being generally finely (in contradistinction to coarse-grained) argillo-arenaceous—in a few localities exposing outcrops of massive gypsum, selenitic gypsum being found pervading, but sparingly, and bituminous coal, but of an impure, slaty character, characterizing almost continuously this whole section. And, commensurate with this section, *arroyos*, *cañons*, *mesas*, with their well-defined crests and escarpments; plateau and hemispherical mounds, intermitting dirty, clay-colored rills, dignified with the name of *rios*, (rivers;) and an all-pervading dull, yellow, dirty, buff-colored soil,—have, in their respective magnitudes and relations, characterized the face of the landscape.

In regard to the fertility or productive qualities of the soil for the whole area traversed this side of Santa Fe, saving the inconsiderable exceptions which have from time to time been noted in my journal, the country is one extended *naked*, *barren* waste, sparsely covered with cedar and pine of a scrub growth, and thickly sprinkled with the wild sage, or artemisia, the color of the domestic sage, suggesting very appropriately the dead, lifeless color of the wild.

Our camp for the night is on a very small rill of good water, in the vicinity of some cornfields, whence, on account of the absence of pasture, we are obliged to draw our forage.

A party of Mexicans and Pueblo Indians, who, under the command of Major Kendrick, assisted by Captain Dodge, left camp this morning to reconnoitre the pass of the Tumecha mountains, are still out; and some fears are entertained lest, on account of their being ignorant of the affray this afternoon, they may be surprised, and possibly be taken, at a disadvantage. Sandoval and a party of Mexicans started off this evening to meet them and direct them to camp.

Fourteenth camp, September 1.—Major Kendrick got in with a portion of his party late last evening, the horses of the Pueblo Indians being too much broken down to permit them to return with him. We all have some apprehension lest their ignorance of our present relations with the Navajos may unwittingly lead them to give the enemy an advantage over them.

Major Kendrick reports that the Navajo guide who accompanied him was called aside on the way by another Navajo, and doubtless informed of the affair of yesterday. He thinks he must have been made acquainted with it; for on two occasions he endeavored to lead the major and his command aside, to give battle to a bear, which, he said, another Navajo had at bay, aside of the route. The major, however, was not to be diverted from his course; and probably it is very well he was not, for, the guide making his escape soon after, the chances were that his object was to lead them into an ambush.

The major knew nothing of the commencement of hostilities till he arrived in camp. And, what liked to have proved a very serious affair, he and his party, last night, whilst approaching the camp, were fired upon by the Mexican picket-guard. Captain Dodge was so near one of these valiant fellows as to become unhorsed by his animal suddenly starting aside from the flash of the fellow's musket; and, what was still more unacceptable, a ball came whizzing by him nearer than he had ever had one before; and, to cap the climax, he afterwards learned that the shot had been made by one of his own company, who happened to be on guard! A soldier was also thrown from his horse for the same cause; and the guide, Carravahal, had his arm grazed by a ball. This vigilant Mexican guard, it seems, had mistaken the major and his party for a body of the enemy! Twice last evening they gave a false alarm!

The troops decamped at 7 a. m.—our course west of south, and the route commencing the ascent of the Tumecha mountains. One mile and a half from camp, we came to a very steep hill, probably about seventy or eighty feet high. The artillery, to overcome this, had to be unlimbered, and all hands were required at the bricoles. The slope of the hill approaching quite nearly the vertical, it would seem that no obstacle, no matter how steep, can obstruct the passage of artillery, where, with adequate human power, and sufficiently strong bricoles, there is present in the officers commanding (as there was here) the necessary energy to secure success. A mile further, we crossed an *arroyo*, coming in from the mountain, from the banks of which bituminous coal, apparently of an excellent quality, exists, in beds of from two to three feet in thickness, with argillaceous shale intervening.

About 10 o'clock, the command was cheered with the sight of Hosta and Sandoval, returning with the Pueblo Indians, who had not been able to get into camp last night. They were received with cheers, and Hosta—the handsome, magnanimous Hosta, apparently unconscious of anything distinguishing about him—was greeted with a most cordial welcome. (See him, in his war costume, in plate 4.) They reported that three of their mules had been stolen by the enemy, but no attack had been made upon them.

Scarcely had the Pueblos joined us, before a couple of the enemy showed themselves, a great distance off, to our front, and, in the *peculiar far-reaching tone* of the Swiss mountain peasant, in which the Navajos seem to be proficients, they made known to us that they wished to have a talk with Sandoval. Sandoval, with Mr. Collins, approaching them, one of them said it was to be regretted that, for so trifling a thing as a horse, so much damage had been done; that by it they had lost one of their greatest warriors, (Narbona;) that the people wanted peace; and that they would come in to-day or to-morrow to obtain it. He further remarked that, in the affair of yesterday, he had had a relative shot in the thigh, who might probably die from the wound.

The road to-day up the slope of the Sierra de Tumecha has been very rocky. A few Navajo huts have been seen. These huts are of conical shape, about eight feet high, eighteen feet in diameter at base, and constructed of poles, which, laid against each other at the apex, are spread out to the required diameter at the base, the whole being covered with bark or brush and mud. Yellow pine, about eighty feet high, and twelve feet in circumference at the trunk, as also some scrub oak—the first we have seen—grow along the route.

Flankers were thrown out to day on either side, to flush any way-layers that might be along the route. Our day's march has been about ten miles. Our encampment is near a pond of excellent water, margined with fine grass, and being shaded by some noble pines, and a very pretty wide-spreading oak adding its variety to the landscape: the combination makes up the most refreshing picture we have seen during the expedition.

This camp is found to be in latitude 36° 7′ 42″; in longitude 109° 54′ 15″.

Fifteenth camp, *September* 2.—A sentinel fired during the night at an Indian, as he says, prowling about camp on horseback. The troops resumed the march at 7 a. m.—the general course west of south. Three miles on the route, we passed on our right a fine pond of water, bordered by a margin of good grass. A mile further brought us to a small streamlet, which, taking its rise in the pass of the mountain, flows eastwardly, doubtless to join the Rio de Tumecha. At this stream the troops were commanded to halt, in order to make the proper preparations for a successful passage through the gorge or gate of the mountain.

Major Kendrick, who, day before yesterday, with a party, had reconnoitered the pass, having represented it as being very difficult, both on account of the obstacles in the way to the passage of artillery and the commanding heights on either side of it, it was believed that here, if anywhere, the enemy would, in a body, make a stand to dispute our advance. The artillery were accordingly placed in a position to cover the passage of our troops; and forty Pueblos, under their elected chief *Ow-te-wa*, (see plate 13,) Captain Dodge voluntarily offering to lead them, were pushed forward in advance, with directions to scale and take post on the heights to the right of the defile. I had noticed with my reconnoitring-glass several of the enemy upon the heights, to the left of the defile; and it was not at all improbable that they were strongly posted on the still more commanding heights on the right. The Pueblo Indians having gallantly gained the heights, and met no enemy, a preconcerted signal, the firing of a rifle, was given, to inform the commanding colonel of the fact. The infantry were then ordered to move forward, a portion of them being at the same time directed to scour the more accessible heights commanding the pass on the left. Soon after, the whole command was put in motion—the packs in the centre, and the artillery bringing up the rear.

The pass at the most dangerous point we found extraordinarily formidable. On the north side is a wall of trap, capped with sandstone, running perpendicularly up from the bottom of the defile to a height of about six hundred feet; and, in addition to this, there are two others, but further removed. On the left side is another height, running up from the defile, with an accessible slope, to a height of probably about three hundred feet. The width of the pass at this point is probably not more than fifty feet, and barely furnishes a passage-way (a sidling one at this) for the artillery. This, the most difficult portion of the pass, is probably about three hundred yards long. Colonel Washington informs me it is the most formidable defile he has ever seen. The artillery were three hours in getting through it. In honor of the colonel commanding, I have, on my map, called it Pass Washington. (See plate 45 for a view of it, looking back.)

The narrow portion of the pass got through, it immediately expands into one of about a quarter of a mile in breadth, and which, for this country, is of extraordinary beauty. The soil here is of a very rich quality. The pines are tall and large, the grass luxuriant, and the surface of the ground, which is sweetly undulating, is covered with a profusion of the most beautiful and delicate flowers—the wild rose, the first I have seen during the expedition, being among them. A stream of pure, wholesome water, trickling along through this scene, westward, adds its beauty to the picture. It is in the midst of a landscape like this, about three-fourths of a mile from the narrowest portion of the gorge, we are encamped.

The rocks about the pass are at base a dark green trap, overlaid by sandstone. A late work, entitled "Doniphan's Expedition," represents the Sierra de Tumecha as "the grandest of mountains, consisting of large masses of granite piled on granite, and penetrating into the region of clouds and permanent snows."* In crossing the ridge, we discovered no granite; and neither remotely, when observing the heights from the plains, nor when near by them, could we perceive the slightest indications of snow.

It is observable that troops attempting to pass the defile from the *east* side of the mountain will find a subordinate eminence, to the west of the point where it was stated the battery was established to cover the movement, upon which a battery could be placed which would be in effective range of the heights commanding the pass on either side.

Captain Dodge informs me that, before the Pueblos reached the heights they were ordered to scale, they halted on the way to receive from their chiefs some medicine from the medicine-bags which each of them carried about his person. This they rubbed upon their heart, as they said, to make it big and brave; and they also rubbed it on other parts of their bodies, and upon their rifles, for the same purpose.

The distance marched to-day is estimated at six miles. For the past two days, on account of the roughness of the route and consequent fear of damage, the viameter has been detached from the wheel of the six-pounder. It was quite apparent that the route we have come is practicable for wagons only as *as far as the east base of these mountains.*

A very pretty stone, between the jasper and chalcedony, has been found strewed over the ground at this and our last encampment. A grizzly bear, it is reported, has been seen near our present camp. The whole command has been in the most buoyant spirits ever since we commenced the ascent of the Sierra de Tumecha—the air, the water, and the scenery all doubtlessly contributing their joint influence.

Sixteenth camp, September 3.—Carravahal representing that there yet remained a very narrow and difficult defile to pass through before we should be entirely extricated from the natural defiles of the route, I was ordered this morning by the colonel commanding in advance, (thirty Pueblos and Lieutenant Tores accompanying me,) to reconnoitre the defile. After getting about half a mile from the camp, we entered a gorge, which, for about a mile, we found very narrow, and commanded by heights on either side. These heights, however, are easily accessible, and can be swept by troops thrown out as flankers. The very narrowest portion of the gorge extends only for about one-third of a mile. The artillery were detained here, on account of obstacles, three-quarters of an hour, and also slightly in crossing the *Rio Negro,* which they did twice subsequently. This stream, which is the one spoken of as passing through our camp of yesterday, and taking its rise in the pass, is a beautiful mountain brook, and, coursing generally south of west, probably runs into the Cañon de Chelly.

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* Page 179.

The gorge we found to-day, as yesterday, surpassingly beautiful. Primary mountain heights extend on either hand for the first three miles, and then the secondary commence. Four miles further, the gorge expands indefinitely to the right and left, the greatest elevation of the heights on either side being probably about eight hundred feet.

The soil of the valley of the Rio Negro is exceedingly rich. Among the *sylva*, I noticed towering pines and firs, also the oak, the aspen, and the willow; and bordering the stream was a great variety of shrubbery, the hop vine, loaded with its fruit, being intertwined among them. Flowers of rich profusion, and of every hue and delicacy, were also constantly before the eye—upwards of ninety varieties having been picked up since we entered the gorge yesterday. Indeed, we are all in hopes that, yesterday and to-day, we have been having an earnest of what we may yet behold in this part of the world—a rich, well-timbered, and sufficiently-watered country, *a thing I have not seen since I left the confines of the United States.*

Our march to-day is estimated at twelve miles, and we are encamped upon the Sieneguilla Chicita, (Little Meadow,) near the Rio Negro, a locality which furnishes good water and grass; and near at hand is an abundance of the *artemisia,* which answers very well for fuel. For a view of the Sieneguilla from the west face of the mountain, see plate 46. Its soil is very rich.

Carravahal informs me that the governor of New Mexico, some years since, attempted to make his way into the Navajo country through the pass we have been threading, and was driven back.

Gregg also, in his "Commerce of the Prairies," probably refers to the same pass in the following passage:

"Towards the close of 1835, a volunteer corps, which most of the leading men in New Mexico joined, was raised for the purpose of carrying war into the territory of the Navajos. The latter, hearing of their approach, and anxious no doubt to save them the trouble of so long a journey, mustered a select band of their warriors, who went forth to intercept the invaders in a mountain pass, where they lay concealed in an ambuscade. The valiant corps, utterly unconscious of the reception that awaited them, soon came jogging along, in scattered groups, indulging in every kind of boisterous mirth; when the war-whoop, loud and shrill, followed by several shots, threw them all into a state of speechless consternation. Some tumbled off their horses with fright; others fired their muskets at random; a terrific panic had seized everybody; and some minutes elapsed before they could recover their senses sufficiently to betake themselves to their heels. Two or three persons were killed in this ridiculous engagement—the most conspicuous of whom was a Captain Hinófos, who commanded the regular troops."—(Pages 288, 289.)

Hosta, to-day, has been treating us again with some more of his traditionary lore. The French (so he says) once attempted to subdue the aboriginal Mexicans, and failed. The Spaniards then came, and succeeded. The latter began to brag of their guns, by which they had accomplished the conquest. Montezuma, hearing of it, said they had no reason to do this, for he could bring a bigger gun than they could. "Why, what can your gun do?" remarked he to the Spaniards. "It can make a hole through a tree," was the reply. "Well," says Montezuma, "mine can split a tree from top to bottom. Now, show me what yours can do?" So the Spaniards shot at a tree and made a hole in it. Montezuma, seeing this, then called down his thunder from the clouds and shivered it from top to bottom!

A series of astronomical observations make the latitude of this camp 36° 2′ 7″; its longitude, 109° 5′ 45″.

Seventeenth camp, September 4.—The weather, during the nights, ever since we left the Puerco, has been quite cold; during the day, on the contrary, it has been generally pleasantly warm—occasionally very warm.

Four Navajos had a talk with Sandoval outside the line of sentinels this morning. Subsequently, four more came to the conference. They all, however, being unimportant men, nothing came out of it.

Our route to-day, more winding than usual, has been generally west of north. The distance marched was 13.43 miles. For the first half of the distance, the *Sierra Rayada* was immediately on our left; and throughout the whole of it, the *Sierra de Sieneguilla* was immediately on our right. These mountains are of a basaltic trap character, in some instances resembling very much the palisades on the Hudson river. This trap is apparently the effect of protrusion, rather than of overflow, and is more irregular in its outlines than that I have already noticed as characterizing the country west of the Rio de Jemez.

At about six miles from our last camp, immediately on the right of the road, I observed a well-marked dike of trap rock, its course being north o east and it leaning slightly towards the north. It exhibits itself in an outcrop of detatched blades, some of them being from thirty to forty feet above the plain, and about three feet thick. (See sketch in plate 47.) The soil from which it projects is of a reddish argillaceous character. This outcrop, it is obvious, must have been the effect of protrusion from below, and at a time when there were rocks against it to prevent an overflow; and these adjacent formations must since have been either decomposed or have sunk.

About half a mile further, we crossed a shallow stream of very good water, running southwestwardly, good grazing being apparent along it. Seven and a half miles from our last camp, we passed on our left a very rich field of wheat, the stalks averaging five and a half feet high, the heads very full, and the grains plump and large. A mile and a half further, another streamlet comes in from the northeast and crosses the route. I noticed, also, in the vicinity of this stream, some good grazing.

Ten miles from our last camp, we met a very steep rocky ascent of about fifty feet in altitude, where the men had to assist at the guns. A mile further brought us to the *Sieneguilla de Juanita*, (Little John's Meadow,) the soil of which, of considerable area, and of a rich mellow calcareo-argillaceous character, looks as if it might produce well. Ligneous petrifactions, and carbonate of lime, in lamellar pieces, of a satin aspect, in fracture, probably the result of tufaceous deposite, lie scattered over the surface. I noticed, also, a great deal of horse ordure lying about, it indicating that the *Sieneguilla* is a favorite resort for these animals. Running through the *Sieneguilla*, in a southerly direction, and probably in the Cañon de Chelly, is the *Rio de Juanito*, a stream, of a sandy bottom, fifty feet wide, and of a few inches in depth, upon which we are encamped. The water of this stream, which is probably constant, is good; and the neighborhood furnishes proper grass and fuel.

The *sylva*, to-day, has been the large yellow pine and the piñon—willows fringing, in places, the streams. Signs of large droves of sheep have been noticed. Prairie dog towns, and rattlesnakes, their concomitants, though not so common as on the great plains intermediate between the United States and this country, are occasionally to be met with. Just before reaching camp, we crossed a well-beaten Navajo trail, running north and south.

It is very interesting to see the picket-guard, composed entirely of *Pueblos*, gathered around the commanding officer's tent every evening, to receive from him their instructions for the night. Habited as they are, with their blankets thrown around them, their *white* turbans (assumed to distinguish them from the enemy, who generally wear *red*) encircling their heads, their rifles lying in their arms, or their bows and quivers slung to their backs, their attitude that of respectful attention, they present a group of a very interesting character. These people possess a great deal of native ease and dignity; and in their calm, reflective countenances, I think I can perceive a latent energy and power, which it requires only a proper political and social condition to develop and make useful.

Some more Navajos (uninfluential men) have had a talk this afternoon with Sandoval, outside the line of sentinels. The word is, as usual, that they want peace; but the official persons, the chiefs, not presenting themselves to obtain it, the colonel commanding is determined to push on to Chelly, the heart of their country, and dictate the terms there. Besides, according to his original design, he is anxious to meet Captain Ker, who, with his command, from information obtained from a chief at the last council, he is disposed to think must have pushed on to that place.

The resulting latitude of this camp, from a series of observations, is 36° 10′ 36″; the longitude, 109° 12′ 15″.

Eighteenth camp, September 5.—This morning, a party, composed of Colonel Washington, Mr. Calhoun, Mr. Collins, Major Kendrick, Lieutenant Dickerson, the two brothers Kern, and myself, visited the head of the renowned Cañon of Chelly, lying southwest about five miles distant from our last camp. This cañon has been for a long time of distinguished reputation among the Mexicans, on account of its great depth and impregnability—the latter being not more due to its inaccessibility than to the fort which it is said to contain. This fort, according to Carravahal, is so high as to require fifteen ladders to scale it, seven of which, as he says, on one occasion, he ascended, but, not being permitted to go higher, he did not see the top of it.

On reaching the cañon, we found it to more than meet our expectations—so deep did it appear, so precipitous its rocks, and so beautiful and regular the stratification. Its probable depth I estimate at about eight hundred feet. At its bottom a stream of water could be seen winding its way along it, the great depth causing it to appear like a mere riband. (See sketch in plate 48.)

As far as time would permit an examination, for a depth of about three hundred feet—I could descend no further, on account of the wall becoming vertical—the formation appeared to be sandstone, horizontally stratified with drift conglomerate. At this depth I found protruding horizontally from the wall, its end only sticking out, a petrified tree of about a foot in diameter, a fragment of which I broke off as a specimen. How did this tree get there? I also picked up at this point, upon the shelf on which I was standing, a species of iron ore, probably red hematite. The colonel commanding returning to camp, after a cursory look at the cañon, in order to put the troops in motion for the day's march, I had not the time necessary to make the full examination which I would have liked. I saw, however, enough to assure me that this cañon is not more worthy of the attention of the lover of nature than it is of the mineralogist and geologist. The whole party returned to camp greatly pleased with this offset excursion, and promise themselves still greater delight when, on their reaching the mouth of the cañon, they will have more time to examine it.

In consequence of the excursion this morning, the troops did not move till about 9. Our course for the day was generally west of north. Two and a half miles from our last camp, we passed on our right a cylindrical mass of trap rock protruding from the summit of the mountain ridge, the outcrop being probably as much as one hundred and fifty feet high. This singular landmark was seen yesterday before reaching camp. Two and a half miles further can be seen, also, immediately on the right of the road, a dike of trap rock ranging very nearly east and west, its eastern terminus of the form of a semi-conical abutment, about five hundred feet in protrusion from the plain below. A portion of this dike is perfectly columnar in its details.

Five and a half miles on our route, we reached the brow of a valley running generally north and south, it being apparently hemmed in at the north, nearest to us, by a range of secondary mountains, and further off by *mésa* heights. The former are of rounded form, and, on account of their white ground being sprinkled with the evergreen cedar, have a motley aspect. The latter present a beautiful facade-like appearance, and are of a deep red color. The intervening valley, on account of the copse-like character of its *sylva*, in contrast with the barren wastes which we traversed on the east side of the Tunecha ridge, was very refreshing to us.

Having marched 7.39 miles, we came to the creek upon which we are encamped. This creek is a clear stream of good water, ten feet wide by half a foot deep, coursing west of south, over a clean and pebbly bottom, and presenting here and there rapids and cascades as delightful to the eye as they are rare in the country. Upon its margin we find a sufficiency of grass for our animals.

The road to-day has been generally good, there having been but two steep hills, which detained the artillery but a short while. The soil has been of an argillaceous character, and in the valleys always appeared to be fertile; the timber, which has been pine and cedar, of a large growth; a few large oaks were also seen. The *artemisia*, as usual, has been the chief, and almost the only, plant, especially upon the uplands.

Twenty-five Mexicans were sent out this afternoon to examine, with Carravahal, the river ahead for a few miles. They had not proceeded, however, more than a mile, when, seeing three or four of the enemy, their hearts failed them, and they returned to camp. Some Pueblos were then added to the party, and the whole put under the charge of Lieutenant Tores. The party returned at about dusk, and report the road good for eight miles, excepting one steep hill, which, however, Lieutenant T. thinks practicable.

Nineteenth camp, Chelly, September 6.—The troops decamped at 6 this morning—an hour earlier than usual, on account of an anticipated long march without water. Our route, though curving considerably towards the north, has been generally a little south of west.

At the respective distances of six and a half, twelve, thirteen, thirteen and a half, sixteen and a half, sixteen and three-quarters, and eighteen miles, we crossed some deep rocky *arroyos*, the first detaining the artillery three-quarters of an hour, the fourth three-quarters of an hour, and the last an hour. The artillery to-day have been obliged to work harder than they have done any day since they started on the expedition. They, however, appear to be equal to any emergency, and, though detained, at times, necessarily, on account of difficulties, they are always sure to be getting along in due time. The infantry, under Captain Sykes, from the commencement of the march, have constantly preserved a compact, effective form, and have ever appeared as a *unit*, to be wielded by their leaders with precision and power.

The country to-day has been rolling—almost, indeed, broken—belts and clusters of trees, and sometimes solitary ones, diversifying its face. Piñon, yellow pine, and cedar have been the sylva—acres of the latter occasionally being dead; the cause not obvious. The artemisia has been the chief *flora*. The cactus, which hitherto has been seen but seldom, to-day was more prevalent.

When two miles on our route, looking back, a fine view presented itself, made up of mountains, beautifully variant in outline, prominent peaks here and there in the background, and, intermediate between them and myself, the troops—horsemen, footmen, and artillery—their arms glittering under the glancing rays of a morning sun, and a cloud of dust betokening their approach.

A mile and a half further, some beautiful red bastion-like rocks appeared, two miles distant, on our right, capped with a whitish armorphous formation. Fifteen miles from our last camp, on our right, we noticed two very singular mésa formations, one of them looking like a high square fort, and discovering, by the daylight which could be seen through it, the appearance of a tunnel running horizontally through and through.

Though not expecting to find water along the way, thirteen and a half miles from our last camp we met some, in deep pools, in a rocky *arroyo* which we crossed. Here may be seen some singular-shaped basins and arches, all the effect of the erosive influence of water upon sandstone formation.

Innumerable signs of stock, principally of sheep, have been seen along the route; and the road we have been travelling looks as if it might be one of the great thoroughfares of the nation.

One of the pack animals to-day falling too far in rear of the main body of the command, the soldier in charge, seeing a Navajo near, and at the same time a dust in rear, as if made by a host of the enemy approaching, thought that discretion was the better part of valor, and, leaving his pack, fled. The force in rear, however, proving to be the Mexican cavalry, and Lieutenant Dickerson happening at the time to be with them, he directed a chase after the Navajo, who by this time had got possession of the pack animal, and was appropriating the contents of its pack to himself. Lieutenant Dickerson informs me that he got five distinct shots at the fellow with his revolver, and, though he was not able to bring him to a surrender, was, nevertheless, successful in causing him to leave the animal and his pack.

It was somewhat exciting to observe, as we approached the valley of *Chelly*, the huts of the enemy, one after another, springing up into smoke and flame, and their owners scampering off in flight.

Just after dark, after crossing an extensive *down* or sand drift, we reached our camping-ground, in the valley of Chelly; and, much to our disappointment, after a hard day's march of 26.45 miles, we are obliged to spend the night without water. The cornfields among which we are encamped furnish, however, an abundance of forage for the animals, and fine roasting ears for the men; but the great beverage of the soldier in his marches—coffee—will, in most instances, have to be dispensed with.

Nineteenth camp, Chelly, September 7.—The fires of our camp were all, yesterday, at dark, from motives of military expediency, extinguished—a phenomenon which doubtless was not without its moral effect upon the enemy, who are hovering around us.

This morning, a couple of Navajos—one of them a chief—were brought into camp by Sandoval, both of them embracing Colonel Washington and Mr. Calhoun, apparently, with a great deal of good will. The chief, whose name is *Mariano Martinez*—habited as he was in a sky-blue blanket greatcoat, apparently of American manufacture, and not unlike my own; a tarpaulin hat, of rather narrow brim, and semispherical crown; buckskin leggins and moccasins; bow and quiver slung about him; a pouch and knife at his side; and possessing a sombre cast of countenance, which seemed to indicate energy and perseverance combined—appeared like a man who had naturally risen up by virtue of the energy of his character, and, from the effects of a maurauding life upon a civilized community, had become impressed with the jacobin look which he at the time discovered. (See a sketch of this chief in plate 49.) The conversation which passed between these chiefs and the colonel commanding was as follows:

Colonel Washington. Who is this man? (referring to Martinez.)

Interpreter. He is the principal chief of the Navajos.

Colonel Washington. Tell him, when a chief wishes to talk with me, by making known his intentions by a white flag, he will be conducted safely into camp; but that everybody else must keep a mile off, or else be liable to be shot.

Are he and his people desirous of peace?

Interpreter. He says they are.

Colonel Washington. Tell them, if they are, they can easily obtain it by complying with the terms of the treaty which they have made, and that the sooner they do comply with them the better it will be for them, as less of their property will be wasted and destroyed.

Interpreter. His reply is, that they will bring in all they have stolen, and comply with the treaty.

Colonel Washington. Mr. Collins, where is the list of the property to be restored under the treaty?

Mr. Collins. Here it is, sir.

Colonel Washington. Add to it that which has been stolen from us on the march.

Mr. Collins. Here it is, sir, with the additions made.

Colonel Washington. Tell the chief the stolen property which the nation is required to restore is 1,070 head of sheep, 34 head of mules, 19 head of horses, and 78 head of cattle.

Interpreter. The cattle, the chief says, he knows nothing about; the Apaches must have stolen *them.*

Colonel Washington. Tell him that, if this should afterwards prove to be true, the cattle will be paid for.

Interpreter. He says, if he cannot bring in the same cattle, he will bring in others to supply their place.

Colonel Washington. When can the chiefs collect here to make a treaty with me?

Interpreter. He says the day after to-morrow.

Colonel Washington. Tell him that will do; and that, when the treaty is made with them, all the property the troops have taken, they will be compensated for. And there was one more thing he would say: that, if they now entered into a treaty with him in good faith, it would result in blessings upon him and his people; but if they did not, it would result in their destruction.

Interpreter. The chief replies that his people will do all he has promised.

Colonel Washington. Tell him the talk is good.

The conference ended, the chief and his attendant, *a la mode Mexicaine*, again embraced Colonel Washington and Mr. Calhoun very impressively, and apparently with much *endearment.*

To day, by digging several pits five feet deep in the arroyo of the valley, a sufficient supply of good water has been obtained for the camp.

The latitude of this camp, by a series of astronomical observations, is found to be 36° 9′ 4″; its longitnde, 109° 42′ 30″.

Nineteenth camp, Chelly, September 8.—Early this morning, a Mexican captive, of about 30 years of age, came into camp to see the colonel commanding. He represented that he was stolen by the Navajos seventeen years ago, and that he did not now wish to be restored to his people again. Indeed, he did not as much as ask about his friends, who, I am informed, are now living at Santa Fe—from the vicinity of which he was stolen, whilst tending sheep. He is a very active, intelligent-looking fellow, and speaks like a native born Navajo—having all their characteristics, in dress, conversation, and manners.

Agreeably to the orders of the colonel commanding, I left camp at 7½ o'clock this morning to make a *reconnaissance* of the renowned Cañon of Chelly. In addition to my assistants, the two Kerns and Mr Champlin, there were in company an escort of about 60 men—Brevet Major Kendrick being in command, assisted by Captain Dodge. Lieutenants Ward, Dickerson, Jackson, and Brown, as also Assistant Surgeon Hammond and Mr. Collins, accompanied the party. Our course for nearly two miles, as far as the mouth of the cañon, was east of south, and up the valley of Chelly. The soil of this valley, which is generally very sandy, is in spots quite fertile—on an average, a belt of probably half a mile in breadth being planted in corn. The cane, also, I noticed growing very luxuriantly in places. The whole breadth of this valley is about three miles.

Reaching the mouth of the Cañon of Chelly, we turned to the left to go up it. Its escarpment walls at the mouth we found low. Its bottom, which in places is as little as one hundred and fifty feet wide, though generally as wide as three or four hundred feet, is a heavy sand. The escarpment walls, which are a red amorphous sandstone, are rather friable, and show imperfect seams of stratification—the dip being slight, and towards the west.

Proceeding up the *cañon*, the walls gradually attain a higher altitude, till, at about three miles from the mouth, they begin to assume a stupendous appearance. Almost perfectly vertical, they look as if they had been chiselled by the hand of art; and occasionally cizous marks, apparently the effect of the rotary attrition of contiguous masses, could be seen on their faces.

At the point mentioned, we followed up a left-hand branch of the cañon—this branch being from one hundred and fifty to two hundred yards wide, and the enclosing walls continuing stupendous. Two or three patches of corn, intermingled with melons, pumpkins, and squashes, were met with on the way.

Half a mile up this branch, we turned to the right, up a secondary branch, the width of which was rather narrow. This branch shows rocks, probably as high as three hundred feet, almost perfectly vertical, and in some instances not discovering a seam in their faces from top to bottom. About half a mile up this branch, in the right-hand escarpment wall, is a hemispherical cave, canopied by some stupendous rocks, a small, cool, acceptable spring being sheltered by it. A few yards further, this branch terminates in an almost vertical wall, affording no pathway for the ascent or descent of troops. At the head of this branch I noticed two or three hackberry trees, and also the *stramonium*, the first plant of the kind we have seen.

Retracing our steps to the primary branch we had left, we followed it up to its head, which we found but two or three hundred yards above the fork—the side walls still continuing stupendous, and some fine caves being visible here and there within them. I also noticed here some small habitations, made up of natural overhanging rock, and artificial walls, laid in stone and mortar—the latter forming the front portion of the dwelling.

Having got as far up the lateral branches as we could go, and not yet having seen the *famous* fort, we began to believe that, in all probability, it would turn out to be a fable. But still we did not know what the main cañon might yet unfold, and so we returned to explore it above the point or fork at which we had left it. Starting from this point, our general course lay about southeast by east. Half a mile further, or three and a half miles from the mouth of the cañon, on its left escarpment, I noticed a shelving place where troops (but not pack animals) could ascend and descend. Less than a mile further, I observed, upon a shelf in the left-hand wall, some fifty feet above the bottom of the cañon—unapproachable except by ladders, the wall below being very nearly vertical – a small pueblo ruin, of a style of structure similar, to all appearances, to that found in the ruins on the Chaco. I also noticed in it a circular wall, which, in all probability, has been an estuffa. The width of the cañon at this point is probably from two to three hundred yards wide, the bottom continuing sandy and level. And, what appears to be singular, the sides of the lateral walls are not only as vertical as natural walls can well be conceived to be, but they are perfectly free from a talus of debris, the usual concomitant of rocks of this description. Does not this point to a crack or natural fissure as having given origin to the cañon, rather than to aqueous agents, which, at least at the present period, show an utter inadequacy as a producing cause?

About five miles from the mouth, we passed another collection of uninhabited houses, perched on a shelf in the left-hand wall. Near this place, in the bed of the cañon, I noticed the ordinary Navajo hut, (a conical lodge,) and close by it a peach orchard. A mile further, observing several Navajos, high above us, on the verge of the north wall, shouting and gesticulating as if they were very glad to see us, what was our astonishment when they commenced tripping down the almost vertical wall before them as nimbly and dexterously as minuet-dancers! Indeed, the force of gravity, and their descent upon a steep inclined plane, made such a kind of performance absolutely necessary to insure their equilibrium. All seemed to allow that this was one of the most wonderful feats they had ever witnessed.

Seven miles from the mouth, we fell in with some considerable pueblo ruins. These ruins are on the left or north side of the cañon, a portion of them being situated at the foot of the escarpment wall, and the other portion upon a shelf in the wall immediately back of the other portion, some fifty feet above the bed of the cañon. The wall in front of this latter portion being vertical, access to it could only have been obtained by means of ladders. The front of these ruins measures one hundred and forty five feet, and their depth forty five. The style of structure is similar to that of the pueblos found on the Chaco—the building material being of small, thin sandstones, from two to four inches thick, imbedded in mud mortar, and chinked in the facade with smaller stones. The present height of its walls is about eighteen feet. Its rooms are exceedingly small, and the windows only a foot square. One circular estuffa was all that was visible. For a sketch of these ruins, with the stupendous rocks in rear and overhanging them, see plate 53; and for a sketch of the pottery picked up about them, see plate 54.

Half a mile above these ruins, in a re-entering angle of the cañon, on its left side, are a peach orchard and some Navajo lodges. Proceeding still further up the cañon, the walls, which yet preserve their red sandstone character, but which have increased in the magnificence of their proportions, at intervals present *facades* hundreds of feet in length, and three or four hundred in height, and which are beautifully smooth and vertical. These walls look as if they had been erected by the hand of art—the blocks of stone composing them not unfrequently discovering a length in the wall of hundreds of feet, and a thickness of as much as ten feet, and laid with as much precision, and showing as handsome and well-pointed and regular horizontal joints, as can be seen in the custom-house of the city of New York.

About eight miles from the mouth of the cañon, a small rill, which below this point had lost itself in the sandy bottom of the cañon, appears above ground; and about five hundred yards further, on the right-hand side, is a lateral cañon, in which we saw another peach orchard.

Having ascended the cañon nine and a half miles, the horses of the Pueblos in company with us not being strong enough for a further exploration, there being no prospect of our seeing the much-talked-of *presidio* or fort of the Navajos, which had all along been represented to us as being near the mouth of the cañon, and the *reconnaissance* having already been conducted further than Colonel Washington had anticipated would be found necessary, the expedition returned to camp, highly delighted with what they had seen. We found, however, the further we ascended it, the greater became the altitude of its enclosing walls—this altitude, at our point of returning, being (as I ascertained by an indirect measurement) five hundred and two feet. The length of the cañon is probably about twenty-five miles. Its average width, as far as we ascended it, may be estimated at two hundred yards. For a view of the cañon, as seen from the lateral branch eight miles above its mouth, see plate 55.

Both in going up and returning through the cañon, groups of Navajos and single persons were seen by us, high above our heads, gazing upon us from its walls. A fellow upon horseback, relieved as he was sharply against the sky, and scanning us from his elevation, appeared particularly picturesque. Whenever we met them in the cañon, they appeared very friendly—the principal chief, Martinez, joining and accompanying us in our exploration, and the proprietors of the peach orchards bringing out blanket-loads of the fruit (at best but of ordinary quality) for distribution among the troops. Indeed, the chief admonished his people, as they stood gazing upon us from the heights above, to go to their homes and give us no trouble.

I noticed the cross, the usual emblem of the Roman Catholic faith, stuck up but in one instance in the cañon; and this is the only one I have seen in the Navajo country.

Should it ever be necessary to send troops up this cañon, no obstruction would be found to prevent the passage of artillery along its bottom. And should it at the same time, which is not at all unlikely, be necessary that a force should skirt the heights above to drive off assailants from that quarter, the south bank should be preferred, because less interrupted by lateral branch cañons.

The mystery of the Cañon of Chelly is now, in all probability, solved. This cañon is, indeed, a wonderful exhibition of nature, and will always command the admiration of its votaries, as it will the attention of geologists. But the hitherto-entertained notion that it contained a high insulated plateau fort near its mouth, to which the Navajos resorted in times of danger, is exploded. That they may have had heights upon the side walls of the cañon, to scale which would require a series of *fourteen ladders*, is indeed probable; for it would require more than this number to surmount the height we measured.

I did expect, in ascending the cañon, to find that the Navajos had other and better habitations than the conical pole, brush, and mud lodge which, up to this time, we had only seen. But none other than these, excepting ruined ones, the origin of which they say they know nothing about, did we notice. Indeed, a Mexican who is a member of the command, and who was a captive among them, says they have no other habitation. In the summer, he informs us, they live wherever the cornfields and stock are. In the winter, they take to the mountains, where they can get plenty of wood. As yet, we have not met a single village of them—it appearing to be their habit to live scatteringly, wherever they can find a spot to plant corn or graze stock. The necessity of living more densely, probably, has not heretofore existed, from the feeling which they doubtless have had up to this period that the inaccessibility of their country was a sufficient barrier to the intrusion of an enemy.

It seems anomalous to me that a nation living in such miserably-constructed mud lodges should, at the same time, be capable of making, probably, the best blankets in the world!

Gregg, in introducing his remarks relative to their skill in this kind of manufacture, holds the following language:

"They (the Navajos) reside in the main range of the Cordilleras, one hundred and fifty to two hundred miles west of Santa Fe, on the waters of Rio Colorado of California, not far from the region, according to historians, from whence the Aztecs emigrated to Mexico; and there are many reasons to suppose them direct descendants from the remnant, which remained in the north, of this celebrated nation of antiquity. Although they live in rude *jacales*, somewhat resembling the wigwams of the Pawnees, yet, from time immemorial, they have excelled all others in their original manufactures; and, as well as the Moquies, they are still distinguished for some exquisite styles of cotton textures, and display considerable ingenuity in embroidering with feathers, the skins of animals, according to their primitive practice. They now, also, manufacture a singular species of blanket, known as the Sarape Navajo, which is of so close and dense a texture that it will frequently hold water almost equal to gum-elastic cloth. It is therefore highly prized for protection against the rains. Some of the finer qualities are often sold among the Mexicans as high as fifty or sixty dollars each."[*]

As regards the hypothesis which Gregg advances in the above, that the Navajos are the direct descendants of the Aztecs, it is possible they may be. But if, as is likely, and as Gregg also supposes, this ancient people once inhabited the pueblos, now in ruins, on the Chaco, how is it that they have retrograded in civilization in respect to their habitations, when they have preserved it in their manufactures?

I know of but two ways to account for it. Either the Navajos are descended from a cognate stock, *prior* to that which built the Chaco pueblos, which stock lived, as the Navajos do now, in lodges—and this agrees with the tradition given by Sandoval[†]—or, in process of time, the cultivable and pastoral portion of the country becoming more and more reduced in area, and scattered in locality, the people of necessity became correspondingly scattered and locomotive, and thus gradually adopted the habitation most suitable for such a state of things—the lodge they now inhabit.

In regard to the manufacture of *cotton* fabrics, in which, according to Gregg, they excel, we observed no evidences at all of this species of manufacture among them, nor any signs of the domestic culture of the plant from which, rather than from a foreign source, they would be most likely to draw the raw material.[‡]

In regard to the manufacture of *plumage*, or feather-work, they certainly display a greater fondness for decorations of this sort than any Indians we have seen; but, though they exhibit taste in the selection and disposition of this kind of ornament about their persons, I saw no exhibition of it in the way of embroidery.

In respect to the population of the Navajo nation, it has been impossible for me to arrive at anything like an approximation of it. Indeed, if the few we have seen bear a proper proportion to the whole number contained in the country, the extent of this population has been greatly exaggerated. But I prefer to believe that, as a nation, they live much scattered, and that those through whose precincts we have passed have studiously avoided us. All things considered, then, I would estimate the population from eight thousand to ten thousand souls: this last number is Gregg's estimate.

As regards their stock, so far as I could observe, and from what the reclaimed Mexican captive before referred to has told me, I should say that it consisted mainly of sheep and horses—mules and cattle forming but an inconsiderable portion of it. We have as yet, however, not fallen upon a drove of either of these animals—which the Mexican explains by saying that they have, the better to conceal them from the troops, been driven to the mountains. Innumerabls signs of sheep, however, have been seen by us. Their horses, though generally better than those to be seen among the New Mexicans, and capable of long and rapid journeys under the saddle, are not, in my judgment, near as fine as what I have seen among the Comanches; and in all these cases they are far inferior to our own, in point of bulk and power.

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[*] Commerce of the Prairies, vol I, pages 285 and 286.

[†] *Ante*, August 28.—Discussion of the origin of the Chaco ruins.

[‡] Since writing the above, on inquiry, I learn from Señor Vigil, secretary of the province, that the Navajos (he has been in their country) formerly manufactured a few cotton fabrics from the raw material, which they were in the habit of importing from Santa Fe and other places; but that this species of manufacture has now almost, if not entirely, ceased.

Nineteenth camp, Chelly, September 9.—To-day, the two chiefs, Mariano Martinez and Chapaton, the latter the chief of the San Juan Navajos, (see his portrait in plate 50,) have been in, on the part of the nation, to deliver up some of the captives, stock, and other property required to be delivered according to the treaty made by Colonel Nuby, and also to enter into a more comprehensive and complete treaty. A large portion of this property not being immediately available, as they said, on account of the distance whence it had to be brought, the colonel commanding, with their consent, appointed a limited period—thirty days—in which all that yet remained outstanding was to be delivered up at Jemez. The murderer of a citizen of Jemez was, as soon as he could be apprehended, to be turned over to the governor at Santa Fe.

The parties there entered into a treaty, by which the government of the United States assumed the paternal control it has been in the habit of exercising over the tribes of Indians within or bordering upon its domain; and the Navajo nation, on its part, through its head chiefs, Martinez and Chapaton, who represented that what they did was binding on the whole nation, gave their full and unequivocal assent to all its terms. Particular care was taken, both by the colonel commanding and the Indian commissioner, to make the chiefs comprehend the full import of the treaty to which they were invited to give their assent. And, to be certain that all was done that could be done to insure this, each and every officer present was appealed to to know whether he considered the treaty had been sufficiently explained; to which they all, without exception, responded in the affirmative.

All that could be accomplished by the expedition, then, may be considered as having been accomplished. A full and complete treaty has been made with the Navajos, by which they have put themselves under the jurisdiction and control of the government of the United States, in the same manner and to the same extent as the tribes bordering the United States. The portion of the captives and stolen property near enough to be made available have been given up, and the remainder has been promised to be restored within a determinate period. Added to this, what is of no inconsiderable value, the troops have been enabled to penetrate into the very heart of their country, and thus a geographical knowledge has been obtained which cannot but be of the highest value in any future military demonstration it may be necessary to make.

It is true the Navajos may fail to comply with the terms of the treaty. But, whether they comply or not, the fact still remains the same, that a treaty *covering the whole ground* of their fealty, (the former covered but a few points,) as well in the general as the particular, was necessary, in order to satisfy the public mind, as well as testify to the whole world that, should any future coercion become necessary, it would be but a just retribution, and, in a manner, their own act.

In the afternoon, after the treaty was concluded, quite a number of Navojo warriors, at least a hundred, came within the vicinity of the camp to trade with the troops, seemingly happy that so peaceful a termination had been given to affairs. They were generally armed with bows and lances, and carried also shields. Very few of them had rifles. In some instances they were very handsomely dressed, an appendage of eagle feathers to their helmet-shaped cap adding not a little to the picturesqueness of their appearance. (For a sketch of a Navajo in costume, see plate 52.)

Their principal articles of traffic consisted of blankets of their peculiar and superior handiwork, dressed skins, and peaches.

The blankets, though not purchasable with money, as it is not used as a tender among them, were sold, in some instances, for the most trifling article of ornament or clothing—it being their manner, if they saw anything about your dress which they fancied, and wanted to buy, to point to it, and then to the article for which they were willing to barter it.

There was a Moqui Indian present at the council this morning as a spectator; and a more intelligent, frank-hearted looking fellow, I have seldom beheld. (See a sketch of him in plate 51.) Indeed, it occurred to me that he had all the air and manner of a well-bred, vivacious American gentleman; and the only thing Indian in his appearance was his complexion. His people, whom he represents as living three days' travel from this place, have the *reputation* of being quite intelligent and orderly—it being one of the articles of their political as well as religious creed, that they are at liberty under no circumstances to take human life; and in regard to infidelity on the part of their women, their laws are said to be very stringent. These people, I am informed, herd stock, grow corn, and live in pueblos, of which there are, according to the Moqui present at this time, but three. It is reported that originally they had a greater number of towns; but, one or more of them becoming guilty of shedding human blood, they were on that account exscinded. Does not this article of their creed, if true, point to a civilized origin? At all events, there is nothing in the features, manners, and general appearance of the Moqui I have seen to belie such an hypothesis, but, on the contrary, a great deal to make it probable.*

Martinez, the principal Navajo chief, brought in a beautiful mule this morning to present to the colonel commanding. The colonel, however, with the remark that it was neither customary nor proper on the part of public officers to receive such presents, graciously declined it.

There having been various contradictory reports among us relative to other American troops having visited Chelly besides Colonel Washington's command, I to-day inquired of Martinez whether such was the fact. His reply was, that the first American troops that had visited Chelly were those at present there.

The climate of this valley we find much milder during the night than that we have heretofore experienced since leaving Jemez.

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*It is proper, however, to state, that Señor Vigil, who has twice visited these people, says he knows nothing of this peculiar article of their faith. He knows, however, that, though they are a docile people, they once were in a defensive war with the Navajos, against whom they used the bow and arrow. I suspect, when the exact truth is known with regard to these people, it will be found that, though inclined to a state of peace, they are not so disinclined to war as not, under coercive circumstances, to stand up, even at the risk of bloodshed, to defend their lives and property.

Twentieth camp, September 10.—Colonel Washington learning yesterday from Chapaton that Captain Ker was not on his way to meet him at this place, as he was led at Tumecha, through information from a chief, to believe might be the case, and a report having been received that the Apaches had within a few days made an attack upon the friendly Pueblo Indians of Zuñi, and killed a number of them, the programme of operations has accordingly been altered, and our destination is now Santa Fe, by the way of Zuñi—the object being to afford this people all the necessary aid which their reported situation demands.

The troops accordingly took up their line of march from Chelly at 7 a. m., the general course for the day being southeast. For the first two miles our route lay up the valley of Chelly, and then turned more eastwardly, it at this point commencing the ascent of a species of *mésa,* or rather upland. Three miles further, the road approximates within a few yards of the Cañon of Chelly. To this point the road is exceedingly rocky and hilly; but these hills can in all probability be avoided by continuing up the valley of Chelly as far as the opposite point mentioned, and then turning to the left up the mésa. (See map.) The country at the point referred to begins to be rolling—scrub pine and a species of spruce, thickly interspersed, constituting the *sylva.* Four miles further, a protrusion of trap rock, looking for all the world like the square tower of a church, with windows, could be seen, bearing northeast, some twelve miles off. Eighteen miles from our last camp, we commenced the ascent of the *Sierra de Laguna,* the slope of which wagons would find some difficulty in overcoming, unless one more easy could be found—a thing not at all improbable—or some labor be expended. The ascent we found to be two miles long—which accomplished, we were on a plateau; a mile more bringing us to our camp-ground for the night, where we find an abundance of wood, a sufficiency of pasturage, but no water.

The soil to-day has been principally of an arid, argillaceous character—the scrub pine and cedar characterizing this portion of the route. Since commencing the ascent of the *Sierra de Laguna,* scrub oak and yellow pine of a large growth have been the *sylva. Cacti* have been frequently seen. We crossed a number of heavy Navajo trails; and signs of large droves of sheep were observable. The day's march has been 20.50 miles.

Twenty first camp, September 11.—The troops raised camp at a quarter after 6 a. m., and followed, as yesterday, a well beaten trail—the general course for the day continuing about southeast. Having proceeded two and a half miles, one of the guards sent in advance yesterday to find water returning and informing the colonel commanding that there was some in a cañon to the left, about five miles off, a detour to the northeast was made by the troops in order to reach it. This cañon is *said* to be a branch of the Cañon de Chelly; and its banks were so steep as to make it necessary for the animals to be disburdened of their packs to enable them to reach the water at its bottom. The supply we found ample, and it doubtless is constant.

After halting for about an hour, the troops resumed the march, the remaining portion of the day's route continuing slightly more southwardly. For the first fourteen and a half miles the country is a pine barren, resembling very much in appearance, and in the arenaceous character of its soil, the pine barrens of Florida, excepting that the former is more compact. For the remaining portion of the route, it is a rolling prairie, variegated with copses of piñon—the soil being of a reddish color, argillaceous in character, and doubtless fertile, if sufficiently watered. Five miles before reaching our present camp, a *mésa* escarpment comes in from the left, and skirts the road on that side for the balance of the way. The walls of this mésa are probably from three to four hundred feet in height. Just before reaching camp, a most singular-looking column appears on the left of the road—resembling, when viewed near by, a vase; when remotely, a statue. It is of sandstone formation, and has an altitude of from thirty to forty feet. (See sketch in plate 56.)

Our camp for the night is more pleasant than usual—a small pond or lake, bordered by a margin of green luxuriant grass, being directly in front of us, to gladden our sight; and the beautiful stratified walls of the Cañoncito Bonito, down which we are to turn to morrow, adding its beauty to the scene. Some ducks, I notice, are constantly hovering around this spot.

The road to-day has been good. The distance marched is 24.83 miles. Several showers of rain have passed around us.

Astronomical observations put this camp in longitude 109° 15′ 30″.

Twenty-second camp, September 12.—Failing, on account of a hazy atmosphere, to get my usual astronomical observations last evening, I succeeded, after the exercise of a great deal of patience, to get a few barely tolerable ones after midnight.

The command left this excellent camp-ground at seven a. m.—its general course for the day being a trifle west of south. Immediately on resuming the march, we turned short to the left, or eastwardly, to thread the *Cañoncito Bonito,* (Beautiful Little Cañon.) This cañon, which is about a quarter of a mile in length, is, on account of its high enclosing walls, and the well-defined character of their stratification, beautiful. The walls, which are nearly vertical, are probably from three to four hundred feet high. Their formation is a red friable sandstone—the stratification, which discloses a dip of about ten degrees towards the east, as also the line of clearage, being very distinctly marked. The width of the cañon is about one hundred feet, a small stream finding its way through its bottom. This cañon differs from that of Chelly, in the face of its walls not being so smooth, in not presenting as large unstratified masses, and in having a *talus* of *debris* at the foot of the walls.

This cañon passed through, the route turned almost due south—following, for the remaining portion of the day, a succession of wide, shallow, fertile valleys, which are generally bordered on their eastern side by escarpment walls of a white and red sandstone formation.

Just after we debouched from the *Cañoncito Bonito,* a most singular prospect of detached turret-like rocks appeared skirting the valley just referred to on its eastern side. And down the valley, in a more southerly direction, a trap dike of a striking character presented itself, a short distance to our front. For a sketch of this view, see plate 37. This dyke, on examination, I found to present a most interesting exhibition of igneous action and vertical protrusion. Its height above the plain is some three or four hundred feet; its breadth, one hundred and fifty; and its length, about two hundred yards. Its strike is nearly due east. Here can be seen, in the same formation, rocks that have been once perfectly fused, and then cooled under pressure, the effect being to make them more dense; rocks that have been fused, and then cooled under the pressure only of the atmosphere, the effect being to make them scoriaceous; and rocks that look as if they had not been fused, but merely baked. I noticed also here, in a sort of cave, a large mass of the same kind of black, agglutinated, pitchy substance I have already described as having been seen, August 24, in the rocks of the *Cañon de la Copa*. It was here, as there, intermingled with bits of straw, &c. These are the only trap rocks we have seen near our route since we left our eighteenth camp.

About nine miles from our last camp, on the route, is *Sieneguilla de Maria*, where we found some very cold water, and grass of an excellent quality. The supply of water here is probably perennial. Three miles further, some very singular whitish abutment rocks, probably of sandstone, are to be seen on the left, jutting out from among rocks of a sandstone character and red color. The difference in the complexion and shape of the former of these rocks indicates a superior hardness, in the formation of which there are prominences. Four miles further, just to the right of the road, appears a beautiful exhibition of horizontal stratification, terminating in one of a bent, semicircular character—the strata (red stone) in the last case being concentric, like the coatings of an onion, and disclosing themselves both by a side and end view. Eighteen miles from our last camp, we crossed a rough, bad place, where some little labor would be required to make it practicable for wagons. Two miles further, immediately on the left of the road, are two enormous hemispherical masses of solid sandstone rock, the radius of one of them being about one hundred feet.

After a march of 23.02 miles, reaching a babbling streamlet of excellent water, which heads in a spring not far distant, and the vicinity affording fine pasturage and plenty of fuel, we encamped.

The soil to-day along the route has been of an argillaceous character, and looks as if it might produce well. As usual, pine and cedar, of rather a scrub growth, have constituted the timber. A deer was killed by a soldier this morning, after running the gauntlet of numerous shots from the command—myself, among the number, throwing away a pistol shot. This is the first deer which has been killed by any of the party. The scarcity of this kind of game may therefore readily be inferred. Indeed, a more wretched country for game of every kind I have never seen than that we have been traversing since we left Santa Fe. A rattlesnake was also killed to-day, and a wildcat is reported to have been seen. I noticed to-day, for the first time on the march, a flock of blackbirds. I have also seen along the route a species of swallow different from anything of the kind I have ever before met with. It is peculiar in being, a large portion of it, both on its back and its belly, white. It probably is a bank swallow.

It is reported that there is a wagon-route from *Cañoncito Bonito* to the Pueblo of Jemez; but, as I have no certain knowledge of its existence, and none at all of its location, I cannot even trace it generally on my map.

The longitude of this camp, by observation, is found to be 109° 18′ 30″.

Twenty-third camp, September 13.—In consequence of a settled, steady rain, nearly all last night—a thing uncommon in this country—the troops did not raise camp to-day till about noon. Our route to day has been a little east of south, through a narrow valley, skirted on the left by a red sandstone escarpment, and on the right by a height, sloping gently towards the valley.

Two miles on the way, to the right of the road, a cañon comes in from the southwest, exhibiting some red sandstone rocks, beautifully stratified in curves, very similar to those of the cycloid reversed.

Just before reaching camp, we noticed to the left of the road a singular combination of swelling buttresses, vertical piers, and caves, and surmounting the whole a natural sandstone formation, having very much the appearance of a tankard. The cover, as well as the handle, was perfect in outline—the latter appearing not a little like the imbodiment of William Penn. (See sketch in plate 58.)

A few hundred yards from this, in the direction of our progress, a beautiful view opened upon us, made up of finely-stratified and variegated rocks, and a refreshing green valley, interspersed with copses of cedar.

The soil to-day has been argillaceous, and looks productive. The sylva has been large yellow pine, cedar of a medium size, and a few scrub oaks. The *artemisia* has been very common. Limestone boulders have been seen to-day for the first time since we left the valley of the *Rio de Jemez*. Fragments of pottery are found about our present encampment, as they have been about others; and, what seems strange, and has occurred at other points, is, that you not unfrequently find it in localities where you would not suppose anybody would ever think of having a habitation.

Our encampment to-night appears peculiarly beautiful. The heavens are deeply blue; the stars shine resplendently bright; the bivouac fires mark well the form and extent of the camp; and peacefully ascending can be seen the blue smoke—the whole forming, in combination with the general cheerfulness which pervades all nature, both animate and inanimate, a most pleasing picture. Indeed, this cheerfulness has been a general characteristic of our encampments ever since we began the march.

The water near our camp, which is in small pools, can only be relied on after showers. The grazing is good, and wood abundant.

Some cutting of cedars along the route to-day would probably be required to make it practicable for wagons.

Twenty-fourth camp, September 14.—The march was resumed at 7 o'clock a. m., the course for the day being about southeast. Two miles on the route, we crossed an *arroyo*, coming in from the north, and coursing through a valley half a mile wide, this valley being skirted on either side by *mesa* heights of red sandstone. The arroyo, I noticed, had a few cotton trees bordering it. Five miles more brought us to a steep hill, about eighty feet high—ascending which, we got out of the valley we had been traversing since we left camp. Wagons, to overcome this hill, would require a slope of easier ascent than the one we followed; and this could be attained by making a road, half excavation and half embankment, along the side of the hill, or, what is very probable, by finding a natural grade at some other locality. Three miles further, another very steep hill, of about one hundred feet in altitude, was surmounted. Here, as at the other hill, a better locality could doubtless be found for a wagon-road, or this one be made practicable, as suggested in relation to the other. The ascent of this hill accomplished, we again descended and crossed another valley, and then a succession of shallow ones, until we reached a cane-brake pond, where, finding a bare sufficiency of water and some good grass, we encamped. The taste of the water, as well as its discoloring effect upon the soil through which it oozes, shows it to be decidedly of a chalybeate character.

Fragments of painted pottery were seen to-day for miles strewed along the road.

The soil, for the first two-thirds of the route, has been argillaceous and fertile; the last third was arenaceous and arid. The *sylva* has been piñon, yellow pine, and cedar. Artemisia, as usual, has been very common. Nodules of compact limestone are found on the road eight miles from our last camp, in an argillaceous soil. More labor would be required on the route to-day to make it practicable for wagons than upon any portion since we left Chelly; but still it can be done without a very considerable expenditure of labor.

Our march to-day, though but 12.08 miles, has been, on account of the heat, more exhausting to the men than any day's march we have had.

I find this camp, by astronomical observation, to be in latitude 35° 11′ 56″, and longitude 109° 6′ 45″.

Twenty fifth camp, *September* 15.—The troops decamped at 7 o'clock a. m.—the general course for the day being, as yesterday, about southeast. They immediately commenced ascending a hill, which would require a little labor to make it practicable for wagons. Having proceeded four and a half miles, we reached the brow of a long gradual slope, whence an extended prospect of distant mountains, mountain peaks, *mésas*, and valleys burst upon us, some of these peaks being probably as much as one hundred miles off. Three and a half miles further, we crossed an *arroyo*, which would require some little labor to make it traversable by wagons. Half a mile further, an old rubble stone wall, without mortar, of an inferior character, was passed on our left. Two miles further, a couple of *mésa* mounds, with a very singular-looking pinnacle standing isolated between them, were also to be seen on the left.

Thirteen miles from our last camp, we entered the valley of the *Rio del Pescado*, (or, as some call the stream, the Rio de Zuñi,) which we find extensively cultivated in corn. There are indications also of there having been an abundant harvest of wheat. The Pueblo of Zuñi, when first seen, about three miles off, appeared like a low ridge of brownish rocks—not a tree being visible (a general characteristic of Mexican and pueblo towns) to relieve the nakedness of its appearance. We had not more than begun to get sight of the pueblo, when we noticed a body of Indians approaching us from it. This party purported to be a deputation, headed by the governor (*cacique*) and *alcalde*, which had come out for the purpose of escorting the governor of New Mexico (Colonel Washington) into town. Their reception of the governor and his suite was very cordial. The *alcalde*, I noticed, was habited in the undress frock of the officers of the army, garnished with the white metallic button.

After proceeding in company about a mile, we were unexpectedly saluted, at a preconcerted signal from a chief, with an exhibition of a sham fight, in which men, young and old, and boys entered with great spirit. Guns were fired, dust was thrown in the air, men on foot and on horseback could be seen running hurry-skurry hither and thither, the war-whoop was yelled, and altogether quite an exciting scene was exhibited. Just as we reached the town, quite an interesting scene occurred. All the male inhabitants of the place, including gray-headed old men, the middle-aged, and the youthful portion of the population, came out to see the governor and shake hands with him. It was particularly interesting to see the juvenile portion of the community engaged in this refined act of courtesy. The governor and suite were then conducted to the *casa* (house) of the governor of the pueblo, where bread, in every variety of form, (loaf, *tortilla*, and *guayave*,) watermelons, muskmelons, and peaches, were laid in profusion before us.

Governor Washington took this occasion to make known to the chief men of the pueblo the cause of his coming among them, (the report, now found to be false, of the Apaches having killed some of their people,) and expressed to them the great satisfaction he felt in seeing their people in so flourishing a condition. He also represented to them the care which the government of the United States had for their welfare. The talk over, the governor and suite, after bidding their hospitable entertainers *adios*, continued their journey a couple of miles further to the camp for the night.

Zuñi is a pueblo or Indian town situated on the Rio de Zuñi. This river, at the town, has a bed of about one hundred and fifty yards wide; the stream, however, at the time we saw it, only showed a breadth of about six feet, and a depth of a few inches. It is represented as running into the Colorado of the West. The town, like Santo Domingo, is built terrace-shaped—each story, of which there are generally three, being smaller, laterally, so that one story answers in part for the platform of the one above it. It, however, is far more compact than Santo Domingo—its streets being narrow, and in places presenting the appearance of tunnels, or covered ways, on account of the houses extending at these places over them. The houses are generally built of stone, plastered with mud. It has a Roman Catholic church, in dimensions about one hundred feet by twenty-seven, built of *adobes*. A miserable painting of *Nuestra Señora de Guadalupe* and a couple of statues garnish the walls back of the chancel. The walls elsewhere are perfectly bare. This is by far the best-built and neatest-looking pueblo I have yet seen, though, as usual, the ragged picketed sheep and goat pens detract not a little from its appearance. The population of the place, based upon the number the governor has given me of persons capable of bearing arms, I estimate at 2,000. But, judging from the size of the town and the number of its inhabitants I saw, I should not place it above 1,200. Gregg, I notice, puts it at between 1,000 and 1,500.* And the author of Doniphan's Expedition (page 195) states that it is upwards of 6.000.

These people seem further advanced in the arts of civilization than any Indians I have seen. They have large herds of sheep and horses, and extensively cultivate the soil. Being far off from any mercantile population, they will sell nothing for money, but dispose of their commodities entirely in barter. Some of our command thought, from their apparent closeness in business transactions, they were the most contracted people they had met. But to my mind, in view of the treatment which they represent themselves to have received from a party of California emigrants which had but a week or two previously passed through their town, their conduct discovered only a proper degree of caution—a caution founded on the principles of self-conservation, and which it was wise only to allow to be removed in proportion as they discovered us to be different from that party, or, in other words, more worthy of their confidence.

In Doniphan's Expedition, (pages 194, 195, 196,) I notice that this pueblo is represented as having been *discovered* by that expedition; and the author, after calling it "one of the most extraordinary cities in the world," adds, "that perhaps it is the only one now known resembling those of the ancient Aztecs."

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* Commerce of the Prairies, note, page 269.

As regards the fact of its remaining undiscovered until the expedition of Colonel Doniphan brought it to light, I have only to remark, that the archives of the State Department of New Mexico show, from 1692, the year when these people were reconquered by the governor and captain-general of the State, Curro Diego de Bargas Zapata, until the present time, they have been a recognised and loyal portion of said territory.*

And as respects its claim to be regarded as "one of the most extraordinary cities in the world," and as undoubtedly resembling, and as probably being the only one now known to resemble, the cities of the ancient Aztecs, the only marked difference I can perceive between it and the pueblos I have visited in New Mexico is, that the town is rather more compactly built, and its streets at some points have the houses built over them. In the habits and dress of the people, so far as they exhibited themselves to us, excepting that they appeared to be somewhat more advanced in refinement, I could observe no difference between them and the other pueblos. So that one pueblo seems to have as good a claim to the Aztec descent, as far as appears to be known, as another. And who can say positively, or even with any *satisfactory* basis of hypothecation, that any of them are descended from that remarkable people.

It is true that these people, as did the Aztecs, possess the art of taming birds; and some might reason from this that they are probably, on that account, from the same stock. But the people of the *Pueblo of Tesuque* also possess the same art. And Abert says it is an art common to the "Pueblos" generally.† The Tesuques then, as also all the other Pueblos, on the ground mentioned, (taming of birds,) have equal claims to the same descent. But the languages of the Tesuques and the Zuñis, as will be seen by referring to appendix B, are radically different. They cannot then have descended from a common stock. In other words, they cannot both be of Aztec origin, though both resemble the Aztecs in the practice mentioned. And so with all the other Pueblos. The different languages they speak are all resolvable (see appendix B) into six distinct tongues. If, then, either of them is to be regarded as of the Aztec descent, on the ground stated, all the others, on the ground of a radical difference of language, must be thrown out of the pale of that descent. And yet they all alike practice the same Aztec art, from report. The idea has also been entertained that the people of Zuñi "live in houses scooped from the solid rock." The description of their habitations which I have already given will show this to be a fallacy.

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* For the following extract from the official journal of Don Diego de Bargas Zapata, now filed among the archives of the State Department at Santa Fe, I am indebted to Mr. Samuel Ellison, the official interpreter for that department As it fixes the date of the reconquering of Zuñi by New Mexico, and discovers incidentally the previous Spanish Roman Catholic rule which obtained over the pueblo, it will not be without interest. The literal translation furnished me by Mr. Ellison, I have freely turned into the following:

"Tuesday, 11th November, 1692: I, the said governor and captain-general, on this day entered the Pueblo of Zuñi, and received the submission of its people. On the same day, the Reverend Fathers Corbera and Banoso baptized two hundred and ninety-four children, male and female. This concluded, I was conducted to a room, and shown an altar, on which were burning two large tallow candles. Removing a piece of ornament, I found the following articles of religious worship: two brass images of Christ, four inches in length, set in wooden crosses; also another image of Christ, eighteen inches long; a portrait of John the Baptist, beautifully executed; one consecrated vase, gilded with gold; a small box with two plates of glass, in which the host is exposed to public view; four chalices, all of silver, and of different patterns; one ancient mass-book, very well preserved; one confession-book, in the Spanish and Mexican language, &c., &c.

D. Diego de Bargas Zapata,
Lugan Ponce de Lion,
Martin de Alday,
Juan Paiz Hurtada,
Roque Macbred,
Juan de Dios,
Cucero de Godoy.

"Before me:

ALONZO RAIL DE AGUILAR,
Secretary of State and of War."

† Report of Lieut. J. W. Abert of his examination of New Mexico, 1846-'47, October 20.

The governor of Zuñi paid us a visit this evening; and a very interesting man we found him to be—about six feet high, athletic in structure, uncommonly graceful and energetic in action, fluent in language, and intelligent—in fact, he actually charmed me with his elocution. From him I learned that his people, a long time ago, lived on a high *mésa* directly in front of our camp, the ruins of which, he says, are still visible, (see a sketch of Zuñi, with the *mésa* referred to in the background, in plate 59;) that, according to tradition, the cause of their quitting it for their present location was as follows: The waters of the valley on one occasion came up higher and higher, until at last they threatened to sweep them all away in the flood. Seeing this, they resorted to this expedient to save themselves: they let down into the waters, from the *mésa*, a man and a woman who had never known each other, and the result was their immediate subsidence. But why they should go down from a *mésa* height into a valley to protect themselves from another possible rise of water, is not apparent. I, however, give the narration just as it was interpreted to me by the official interpreter. The waters, the chief said, came from the Rio Grande and other rivers, and spouted up all around. If this rise of water is not altogether a fable, I know no other way to account for it than by supposing it to have been the result of an earthquake. He further represents that they came originally from the setting sun. To the question, whence the origin of the Albinos among them, he replied that they were all of pure Zuñi blood, (and I have since learned from him, at Santa Fe, that there are *but seven* of them among his people.) In regard to the ruins on the Chaco, he says he has seen them, but knows nothing of their origin.

Two Navajos came into camp this afternoon and delivered up a captive Mexican boy. They represent they are from *Chusca,* and that their people are collecting the stolen property for the purpose of surrendering it, agreeably to treaty.

The services of the Peublo Indians being no longer required, they were this evening, after a complimentary notice of their conduct by the colonel commanding, discharged.

The soil to-day along the route, for the first eight miles, was arenaceous; for the balance of the way, it was argillo-arenaceous. For the first ten miles, the *sylva* was cedar and piñon; for the balance of the way, there was no wood to speak of. The distance marched was 17.45 miles. The road was heavy, but, with some little labor upon the *arroyos,* can be made practicable for wagons.

Just before reaching Zuñi, we passed the dead body of an Indian lying perfectly exposed upon the ground. We afterwards learned from the governor of the pueblo that the body was that of a Navajo prisoner, whom they had killed five days since, by direction of a California emigrant. Competent authority, surely!

Twenty-sixth camp, September 16.—I left this morning in advance of the troops, to visit the ruins of Old Zuñi spoken of by the governor of the pueblo last evening. To reach the *mésa* on which they are represented to be situated, I passed a large number of cornfields. On reaching the foot of the *mésa*, I found the ascent so difficult as not to be able, with the time I had at my disposal, to reach its summit. I therefore struck off diagonally to meet the command, which I noticed had, in the mean time, at the usual hour—7 a. m.—resumed its march. I paused, however, sufficiently long near the *mésa* to contemplate the figure of a woman seated high up upon a pedestal, from which, with face turned towards the probable locality of the ruins, she presented the appearance of one overcome with grief at the sad picture which lay before her. The formation was probably of sandstone; and it is not at all unlikely that the narrative made by the governor last evening had a great deal to do with the conceit.

The route to-day, which has been slightly north of east, up the valley of the *Rio de Zuñi*, after getting a mile and a half from camp, passed between a couple of low mésas, capped with basaltic trap—that on the left being surmounted with the remains of some old but comparatively recent buildings and *corral* enclosures. These structures have been built of basaltic boulders, coarsely held together with mud mortar. The circuit of the pueblo, in plan, is about five hundred by one hundred feet. I noticed here, for the first time on the march, a beautiful exhibition of lava, which had been fixed in its wavy, undulating state by sudden refrigeration. This locality is the commencement, eastward, of the evidences of a basaltic, if not of a comparatively recent volcanic overflow, and on that account was regarded by me with considerable interest. The thickness of the overflow was as much as thirty feet above the soil, and seemed also to extend below it.

A mile and a half further, we crossed the Rio de Zuñi—its bed at this point being about thirty feet wide, and very miry. We then threaded a cañon of about three hundred yards in breadth, bounded by mésa walls of sandstone.

Twelve miles from our last camp, we passed, on our left, the ruins of another old pueblo, the plan of which was about three hundred by four hundred feet. The houses, I noticed, were continuous in structure, originally two stories in height; had been built of flat stones, cemented by mud mortar; and were arranged on the sides of a rectangle, thus making a large interior court. In the centre of the court, I noticed what appeared to have been a square estuffa, eighteen by twelve feet in plan, and ten feet in height—its flat roof, or *azotea*, still remaining quite perfect. The floor joists of the houses could still be seen protruding from the walls, in a very good state of preservation; and fireplaces and chimneys were yet apparent. This pueblo, like those on the Chaco, ranges about north and south, but in the details of its masonry it is far inferior; and in the style of its architecture it resembles not a little that of the Mexicans of the present day. Indeed, the evidences are that it is of a comparatively modern origin. The court-yard, I noticed, had been recently cut into corrals for stock. Fragments of pottery, as usual, lay scattered around. In Doniphan's Expedition, pages 197, 198, I read as follows: "On the head-waters of the *Piscao*, and high up in the mountains, Colonel Doniphan relates that he came to the ruins of an ancient city. Near the ruins are immense beds of vitreous deposite and blackened scoriæ, presenting the appearance of an immense molten lake in the valleys, and other volcanic remains, with chasms and apertures opening down through this stratum of lava to an unknown depth. This vitreous surface, with its sharp asperities, was exceedingly severe on the feet of the mules and horses, wearing them to the quick in a short time. The figure of the city was that of an exact square, set north and south, so that its four sides corresponded with the four cardinal points. In the centre was a large square, or plaza, which, from its appearance, might have been used for military parade-grounds, and for corralling stock in the night time." Query? As the ruins I have just described are the only ones we saw on the head-waters of the *Pescado* (which we followed up to its source) approaching the form of a square, are they not the same as those referred to in the above extract? But we saw nothing of the "extensive molten lake in the valleys, with chasms and apertures opening down through lava to an unknown depth," spoken of as being near the ruins; neither did our animals have their hoofs "worn to the quick in a short time" by travelling over any vitreous surfaces.*

But to proceed with my journal: There are about the ruins just adverted to some fine springs; and the waters of the *Rio del Pescado* course directly by it, clear and bubbling. The soil in the vicinity exhibits signs of recent cultivation, and appearances indicate that the valley in this quarter was once yet more extensively cultivated. Two miles further brought us to a couple of noble springs, bubbling up, pure and cold, from the foot of some basaltic rocks. These springs seem to be the main sources of the Rio del Pescado, (Rio de Zuñi,) and are called *Los Ojos del Pescado*. Near these springs we are encamped.

Within a few yards of us are several heaps of pueblo ruins. Two of them, on examination, I found to be of elliptical shape, and approximating a thousand feet in circuit. The buildings seem to have been chiefly built on the periphery of the ellipsis, leaving a large interior court; but their style and the details of their construction, except that they were built of stone and mud mortar, are not distinguishable in the general mass. The areas of each are now so overgrown with bushes, and so much commingled with mother earth, as, except upon critical examination, to be scarcely distinguishable from natural mounds. The usual quantum of pottery lies scattered around.

The governor of Zuñi, who is again on a visit to us, informs us that the ruins I have just described, as also those seen a couple of miles back, are the remains of pueblos which his people formerly inhabited. He has brought to Colonel Washington a finished specimen of the wicker-ware which, both among the Navajos and the Zuñis, I have noticed, in the shape of large bowls and vases. This species of vegetable ware is of so closely-compacted a texture as to hold water, and is superior to anything of the kind I have ever seen in the States. The Zuñi give the *Coyotero* Indians the credit of making them.

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* Some fifty miles east of this locality, on our route to Laguna, we met *acres* of lava, and extensive fissures; but this was on the head-waters of the Rio San José, a tributary of the Rio Puerco. I never heard, however, that our animals suffered from sore feet.

The day's march has been 13.71 miles. The route, which has been of a gradual ascent, excepting for an inconsiderable portion of it, among some basaltic rocks, and at the crossing of the Rio de Zuñi—neither of these places presenting any formidable impediments—is excellent for wagons. The soil of the valley, which is of an argillo-arenaceous character, is exceedingly fertile. Scrub cedars have dotted the hills, and the artemisia the valleys.

We have met to-day, as we did yesterday, a number of Zuñi Indians carrying bags of wheat upon horses and *burros* (asses) to their pueblo. These people seem to have discovered the principle of industrial accumulation, and therefore of social progress, more than any Indians I have seen.

My astronomical observations place this camp in latitude 35° 5′ 12″, and longitude 108° 41′ 45″.

Bivouac, Inscription rock, September 17.—The incidents of to-day have been peculiarly interesting, as the narration of them in their natural order will show:

The troops resumed their march at 7 a. m., the course for the day being generally nearly due east, and, for the first three or four miles, up the valley of the Rio de Zuñi. This distance travelled, an extended and beautiful view of handsomely-rounded blue hills, or mountain peaks, presents itself to the front, low distant hills being seen on the right, and exhibiting itself a champaign country, intermediate.

A couple of miles further, meeting in the road Mr. Lewis, who was waiting for me to offer his services as guide to a rock upon the face of which were, according to his repeated assertions, half an acre of inscriptions, many of them very beautiful, and upon its summit some ruins of a very extraordinary character, I at once fell in with the project, and obtained from the colonel commanding the necessary permission. Taking with me one of my assistants, Mr. R. H. Kern, ever zealous in an enterprise of this kind; the faithful Bird, an *employé* who had been with me ever since I left Fort Smith—Mr. Lewis being the guide—and a single pack animal, loaded with a few articles of bedding, a few cooking utensils, and some provisions,—we diverged from the command, (see map,) with the expectation of not again meeting it until we should reach the Pueblo of Laguna, from seventy to eighty miles distant. There were many in the command who were inclined to the belief that Lewis's representations were all gammon. In regard to the *extent* of the inscriptions, I could not but believe so too; but as respects the fact of there being some tolerable basis for so grandiloquent a description, I could not, reasoning upon general principles of human nature, reject it. Mr. Lewis had been a trader among the Navajos, and, according to his statement, had seen these inscriptions in his journeyings to and from their country. And now he was ready to conduct me to the spot. How could I doubt his sincerity? I could not; and my faith was rewarded by the result.

Bearing off slightly to the right from the route of the troops, we traversed for eight miles a country varied, in places, by low *mésas*, blackened along their crests by outcrops of basalt, and on our left by fantastic white and red sandstone rocks, some of them looking like steamboats, and others presenting very much the appearance of facades of heavy Egyptian architecture. This distance traversed, we came to a guadrangular mass of sandstone rock, of a pearly whitish aspect, from two hundred to two hundred and fifty feet in height, and strikingly peculiar on account of its massive character and the Egyptian style of its natural buttresses and domes. Skirting this stupendous mass of rock, on its left or north side, for about a mile, the guide, just as we had reached its eastern *terminus*, was noticed to leave us, and ascend a low mound or ramp at its base, the better, as it appeared, to scan the face of the rock, which he had scarcely reached before he cried out to us to come up. We immediately went up, and, sure enough, here were inscriptions, and some of them very beautiful; and, although, with those which we afterwards examined on the south face of the rock, there could not be said to be half an acre of them, yet the hyperbole was not near as extravagant as I was prepared to find it. The fact then being certain that here were indeed inscriptions of interest, if not of value, one of them dating as far back as 1606, all of them very ancient, and several of them very deeply as well as beautifully engraven, I gave directions for a halt—Bird at once proceeding to get up a meal, and Mr. Kern and myself to the work of making *fac similes* of the inscriptions.

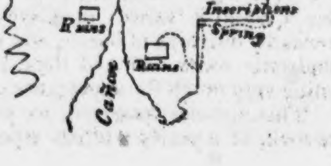
These inscriptions are, a part of them, on the north face of the rock, (see plate 60,) and a part on the south face, (see plate 61.) *Fac similes* of those on the north face, drawn to a given scale, will be found in plates 65, 66, and 67, the order of enumeration being that of their relative position from east to west, and the strength or weakness of the letters in the drawing, as well as the complexion of the rock, being an imitation of them as we found them on the rock. *Fac similes* of the inscriptions on the south face will be found in plates 68, 69, 70, 71, 72, 73, and 74.

It will be noticed that the greater portion of these inscriptions are in Spanish, with some little sprinkling of what appeared to be an attempt at Latin, and the remainder in hyeroglyphics, doubtless of Indian origin.

The face of the rock, wherever these inscriptions are found, is of a fair plain surface, and vertical in position. The inscriptions, in most instances, have been engraved by persons standing at the base of the rock, and are, therefore, generally not higher than a man's head.

The labor of copying the inscriptions having employed us from about noon till near sunset, and there yet being more than enough to keep us at work for the balance of the day, we suspended copying the remainder till the morrow, in order that before dark we might visit the "wonderful ruins" Lewis had assured us we would find on the summit of the rock. So, taking him as our guide, we went around to the south face of the wall, along which we continued until we came to an angle, thus:

Plan of rock.



where, canopied by some magnificent rocks, and shaded by a few pine trees, the whole forming an exquisite picture, (see sketch in plate 62,) we found a cool and capacious spring—an accessory not more grateful to the lover of the beautiful than refreshing to the way-worn traveller. Continuing along the east face of the rear projection or spur of the rock a few yards further, we came to an accessible escarpment, up which we commenced our ascent, the guide taking off his shoes to enable him to accomplish it safely. After slipping several times, with some little apprehension of an absolute slide off, and a pause to take breath, we at last reached the summit, to be regaled with a most extensive and pleasing prospect. On the north and east lay stretching from northwest to southeast the *Sierra de Zuñi*, richly covered with pine and cedar; to the south could be seen gracefully-swelling mounds and distant peaks, beautifully blue on account of remoteness; to the west appeared the horizontal outline of mésa heights, with here and there a break, denoting an intervening cañon or valley; and lying between all these objects and my point of view was a circuit of prairie, beautifully tasty on account of solitary and clustered trees, or sombrously dark on account of low mésas and oblong ridges covered with cedars.

This extensive scene sufficiently scanned, we proceeded to examine the ruins which the guide, true to his word, pointed out immediately before us. These ruins present, in plan, a rectangle two hundred and six by three hundred and seven feet, the sides conforming to the four cardinal points. The apartments seem to have been chiefly upon the contour of the rectangle, the heaps of rubbish within the court indicating that here there had been some also. (See ground plan in plate 63.) There appear to have been two ranges of rooms on the north side, and two on the west. The other two sides are in so ruinous a condition as to make the partition-walls indistinguishable. On the north side was found traceable a room seven feet four inches by eight and a half feet; and on the east side, one eight and a half by seven feet. There was one circular *estuffa* apparent, thirty-one feet in diameter, just in rear of the middle of the north face. The main walls, which, except for a length of about twenty feet, were indistinguishable, appear from this remnant to have been originally well laid—the facing exposing a compact tabular sandstone varying from three to eight inches in thickness, and the backing a rubble kind of masonry, cemented with mud mortar. (See facing depicted in drawing No. 3, plate 41.) The style of the masonry, though *next*, as far as our observation has extended, to that of the pueblos of Chaco, in the beauty of its details is far inferior. Here, as usual, immense quantities of broken pottery lay scattered around, and of patterns different from any we have hitherto seen. (See plate 64.) Indeed, it seems to me that, to have caused so much broken pottery, there must have been, at some time or other, a regular sacking of the place; and this, also, may account for this singular phenomenon being a characteristic of the ancient ruins generally in this country. At all events, we see nothing of this kind around the inhabited pueblos of the present day, in which pottery is still much used; and I can see no reason why, if their inhabitants were of their own accord to desert them, they should go to work and destroy the vessels made of this kind of material.

To the north of west, about three hundred yards distant, a deep cañon intervening, (see plan of rock, &c., above,) on the summit of the same massive rock upon which the inscriptions are found, we could see another ruined pueblo, in plan and size apparently similar to that I have just described. These ruins, on account of the intervening chasm, and want of time, we were not enabled to visit.

What could have possessed the occupants of these villages to perch themselves so high up, and in such inaccessible localities, I cannot conceive, unless it were, as it probably was, from motives of security and defence.

The idea has been generally entertained, and I notice Gregg gives currency to it, that a portion of the ruins of this country are "at a great distance from any water, so that the inhabitants must have entirely depended upon rain, as is the case with the *Pueblo of Acoma* at the present day."*

Near all the ruins I have yet seen in this country, I have most generally found water; and in those cases where there was none, the dry bed of a stream, in convenient proximity, gave sufficient evidence that even here, in times past, there was a supply. Besides, there are at the present day Mexican ruins to which the inhabitants now point as having been deserted on account of the creeks near them failing. Such, for instance, is the Mexican village called *Rito*, (which we subsequently passed,) on the San José—its Roman Catholic church and other buildings conclusively attesting that it had been deserted not many years back.

As regards the inhabitants of Acoma at the present day relying, as Gregg states, for water upon the rains, his information must have been from report; for Abert expressly tells us the contrary. His language is, (he is speaking of Acoma and its vicinage,) "We had encamped by the side of some holes that the Indians had dug; these, they said, yielded a constant supply of water; and between our camp and the city there was some water that ran along the bed of a stream for a few yards, when it disappeared beneath the sand. This furnished the inhabitants with drinking water."† Besides, I doubt very much if in this country the water that could be collected from rains by any artificial process would be near sufficient to answer the wants of the people. I doubt it, for the reason that the chief sources of supply to the streams appear not to be from the rains—few and scant—which fall upon the plains, but from the rains which are produced by and break upon the mountains.

But to continue my journal: The shades of evening falling upon us in our labors, we were constrained to retrace our way down to the plain; and it was not long before we were at the base of the rock, hovering over a bivouac fire, eating our suppers, and talking over the events of the day—the grim visage of the stupendous mass behind us occasionally fastening our attention by the sublimity of its appearance in the dim twilight.

Twenty-eighth camp, Ojo del Gallo, September 18.—The excitement of yesterday's discovery, together with rather a hard pallet, and the howling of the wolves, prevented my having as comfortable a night's rest as I would have liked. Often did I gaze, in my restlessness, *au ciel*, to witness the culmination of that beautiful constellation, Orion, the precursor, at this season of the year, of the approach of day; and as often did I find myself obliged to exercise that most difficult of virtues, patience—the sure key, with the proper application of subordinate means, to success.

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*Commerce of the Prairies, vol. I, p. 284.

†Lieutenant Abert's Report on New Mexico, 1846-'47, October 21.

The dawn of day at 3 o'clock appearing, we got up, for the purpose of hastening breakfast, in order, that by daylight we might be ready to continue our labors upon the inscriptions. Besides, finding that, to reach the rock yesterday, our divergence from the route of the troops had been but about three miles, and being anxious to join the command to-night, in order that I might keep up the proper succession of astronomical positions, (my instruments being with the troops,) I felt desirous to hasten our work, so that I might effect the object.

Our breakfast over, the day opening beautifully, and the feathered race regaling us—an unusual treat—with their gay twittering, we hastened to the work of finishing the *fac similes*. These completed, and Mr. Kern having engraved as follows upon the rock: "Lt. J. H. Simpson, U. S. A., and R. H. Kern, artist, visited and copied these inscriptions, September 17, 1849," we found ourselves ready by 8 o'clock to commence our journey to overtake the command.

A large number of the hieroglyphics, (on the south side of the rock,) and many names and dates, are evidently—from the in some cases faint, and in others interrupted or broken, appearance of the inscriptions—gone; and for this cause, as well as from an occasional failure in the perfect engravement of a letter, and therefore its assimilation in appearance to others nearly resembling it in form, the *fac similes*, though, as a whole, generally transcriptive of the letters or words intended by the inscribers, in some few instances are, doubtlessly, variant from the exact orthography intended, and therefore difficult to be deciphered. A *literal* rendering of them into English, so far as I have been able to have it accomplished, by the conjoint assistance of Chief Justice J. Houghton, Señor Donaciano Vigil, secretary of the province, and Mr. Samuel Ellison, the official translator, will be found below. I prefer to give them literally, because it is the most faithful mode of translation; and though the sense, in some instances, might be given in better English, yet, for the sake of accuracy, and because the meaning is apparent under a literal translation, I think it best to present them in this form, beginning with—

PLATE 65.

"Augustin de Hinojos."

"In the year 1641, Bartolome Romelo," (here words not decipherable.)

"In the year 1716, upon the 26th day of August, passed by this place Don Feliz Martinez, Governor and Captain General of this kingdom, for the purpose of reducing and uniting Moqui," (a couple of words here not decipherable.)

"Licentiate Chaplain Friar Antonio Camargo, Custodiari, and Ecclesiastical Judge."

"Simon de Salas."

"Antonio Nomoya."

PLATE 66.

"On the 28th day of September, of the year 1737, arrived at this place Batchelor Don Juan Ignacio de Arrasain."

"Passed by this place Diego Belasques."

"On the 28th day of September, of the year 1737, arrived at this place the Illustrious Doctor Don Martin De Liza Cochea, Bishop of Durango, and on the 29th left for Zuñi."

"Joseph Dominguez passed by this place in October, and others September 28, with much caution and some apprehension."

"Juan de San Esteban."

"Puilancies."

"The Father Ezquerr."

"Antonio B***," (this name not decipherable.)

(Here a word or two not decipherable.) "Don Francisco, (a word or two not decipherable,) for the impossibility—*Jene*—there to subject; his arm undoubted, and his valor, with the wagons of our Lord the King, a thing which he alone did—*E fecio de Abtosio G*—six hundred and twenty nine, (probably intended for 1629.) *Quesby Eu Acuni Pase y la Felleue.*"

PLATE 67.

"Juan Garica de la Revâs, Chief Alcalde, and the first elected of the town of Santa Fe, in the year 1716, on the 26th of August. By the hand of Bartolo Fernandez Antonio Fernandez Moro."

"Augustin de Minojos."

"Juan Gonzalos, year 1629."

(The characters in the double rectangle seem to be literally a sign-*manual*, and may possibly be symbolical of Francisco Manuel, though the double thumb would appear to indicate something more.)

"On the 14th day of July, of the year 1736, passed by this place General Juan Paez Hurtador, Inspector. And in his company Corporal Joseph Armenta, Antonio Sandobal Martines, F. Guapo, Alonzo Barela, Marcus Duran, Francisco Barela, Louis Pacheco, Antonio de Salas, Roque Gomas."

"Vicente de Senorgorta and (name not decipherable) fought on account of these questions," (the remainder not intelligible, except that *lecor*—probably intended for *licor*, liquor—seems to have had something to do with the quarrel.)

"Joseph Ramos."

"Diego Nunez Bellido."

"Diego."

"Friar Zapata."

"Bartolome Narrso, Governor and Captain General of the Provinces of New Mexico, for our Lord the King, passed by this place, on his return from the Pueblo of Zuñi, on the 29th of July, of the year 1620, and put them in peace, at their petition, asking the favor to become subjects of his Majesty, and anew they gave obedience; all which they did with free consent, knowing it prudent, as well as very christian, (a word or two effaced,) to so distinguished and gallant a soldier, indomitable and famed; we love" (the remainder effaced.)

PLATE 68.

"Antonio Gon Salez, in the year 1667. (Some characters not decipherable.) Country of Mexico, in the year 1632, folio (some characters no intelligible,) Bengoso, by order of Father Liebado Lugan."

PLATE 69.

"Passed by this place with despatch, (a word or two not decipherable,) 16th day of April, 1606."

"Cayado, 1727."

"I. Aparela, 1619." (Hieroglyphics not decipherable.)

PLATE 70.

"Passed by this place Sergeant Major and Captain Juan Archutela, and the traveller Diego Martin Barba and Second Lieutenant Juan Ynes Josano, in the year 1936." (Hieroglyphics not decipherable.)

PLATE 71.

"Here served General Don Diego de Bargas, to conquer to Santa Fe, for the royal crown, New Mexico, by his own cost, in the year 1692."

"By this place passed Second Lieutenant Joseph de Payba Basconzelos, in the year in which the council of the kingdom bore the cost, on the 18th of February, in the year 1726."

PLATE 72.

"In the year 1696 passed D. M."—(hieroglyphics not decipherable.)

PLATE 73.

"P. Joseph de la Candelaria."

"O. R., March 19, 1836." (These are the only initials with an English date before Mr. Kern engraved ours. The hieroglyphics not decipherable.)

PLATE 74.

"Pero Vacu (possibly intended for *vaca*—cow) ye Jarde."

"Alma."

"Leo."

"Captain Jude Vubarri, in the year of our Lord 1," (probably meaning 1701. The hieroglyphics, excepting what appears to designate a buffalo, not decipherable.)

The translations of the several inscriptions, so far as it has been possible to have them effected, having now been given, I introduce, in this connexion, a letter from the secretary of the province, (received since the expedition,) by which it will be perceived that two of the persons whose names are inscribed—General Don Diego de Bargas, and General Juan Paez Hurtador—have been governors of New Mexico. This letter is also interesting on account of the other historical facts which it divulges. For its translation I am indebted to Chief Justice Houghton:

"SANTA FE, *October* 19, 1849.

"SIR: The engravings which are sculptured on the rock of Fish spring, near the Pueblo of Zuñi, copies of which you have taken, were made in the epochs to which they refer. I have an indistinct idea of their existence; but, although I have passed the place some three times, I never availed myself of the opportunity to observe them. The other signs or characters noticed are traditional remembrances, by means of which the Indians transmit historical accounts of all their remarkable successes. To discover these sets by themselves, is very difficult. Some of the Indians make trifling indications, which divulge, with a great deal of reserve, something of the history, to persons in whom they have entire confidence.

"The people who inhabited this country before its discovery by the Spaniards were superstitious, and worshipped the sun.

"I would be glad to relate to you, with exactness, events which are passed; but I am deprived of this satisfaction from the want of certain information in regard to the particulars, because some of them occurred a very few years after the conquest made by Juan de Oñate, in the year 1595, and all records preceding the year 1680 are lost, as the Indians burnt the archives in their insurrection against the conquerors who then occupied the country.

"In 1681, Governor Antonio de Otermin received orders from the viceroy to return and conquer. He made his entrance to the Pueblo of Cochiti, encountered resistance, and, on account of the small force he brought, retired to El Paso in the same year. Gerbaceo de Cruzat y Gongora succeeded him in command, who also remained established at El Paso.

"In the following year, Cruzat made an expedition against New Mexico, took possession of the capital, and extended his conquests a little more effectually, until the following year, when, it being impossible for him to sustain himself longer, he returned to El Paso.

"In the year 1693,* Curro Diego de Bargas Zapata penetrated as far as the Pueblo of Zuñi, and, without proceeding further, returned to El Paso. In the year 1695, he obtained the entire pacification of the country.

"There were afterwards a succession of governors, among whom are numbered Feliz Martinez, Juan Paez Hurtado, and many others, of whom can be produced exact information by referring to the time of the administration of each, according to the registry in the ancient archives of the government. The short time before your departure does not afford the necessary opportunity to register and give to you an historical relation of these events. This account, therefore, should not be regarded by you as one which should direct your idea entirely, for my limited capacity does not permit me to search into all the particulars necessary; but it may serve you as a certain guide to direct the history, the events being marked in chronological order.

"Should these remarks prove useful to you, and I have facility of access to the archives, as I have now, I will with pleasure undertake the task of making the relation, and will despatch it to the point you may direct me.

"With nothing, more, I am, señor, your obedient servant,

"DONACIANO VIGIL.

"Lieut. J. H. Simpson,

"*Topographical Corps, U. S. A.*"

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*According to the extract from De Barga's journal already given in a note under the head of the twenty-fifth camp, his conquest of Zuñi bears date November 11, 1692, and in this year corresponds with that inscribed on the rock.

But to proceed with our journey: Lewis thinks the road to Laguna by the way of the *Moro*, or Inscription rock, and the Pueblo of Acoma, is better for wagons than that which the troops have taken. He says it has only one bad place, and that can be avoided by making a detour of two miles. Water and grass, according to his representation, are ample along it. Carravahal, however, (and a most excellent guide he has proved himself to be,) thinks the other the best, and, according to the map, it would appear to be quite as direct.

As has been already remarked, by 8 o'clock a. m. we were ready to commence our journey—it being our intention to join the main command, if possible, before night. For the first three miles our route lay east of north, when, getting again into the road taken by the troops, we immediately turned to the right upon it—our course thence for the day being nearly due east. This road, we find, gives indications of having been considerably more travelled than that passing by the Inscription rock. A mile and a half more traversed, over a heavy sandy soil, upon which I noticed the flax growing in its wild state, we found ourselves commencing the ascent of the *Sierra de Zuñi*. This ascent, for a few miles, is quite gradual, the road leading up a beautiful narrow valley, clothed with a rich black loamy soil, and interspersed with large pines. Six and a half miles on the route, I noticed some massive limestone, in large quantities, cropping out from either side of the valley. Some of it is a coarse-grained marble. Two miles further, the ascent becomes quite steep and difficult on account of loose rocks. The route, however, continues practicable for wagons; and no doubt an easier grade could be found, possibly, to the right.

A mile further traversed, we found ourselves on the summit of the pass of the *sierra*, from which, bearing north of east, some thirty miles off, we caught sight, for the first time, of one of the finest mountain peaks I have seen in this country. This peak I have, in honor of the President of the United States, called *Mount Taylor*. Erecting itself high above the plain below, an object of vision at a remote distance,[*] standing within the domain which has been so recently the theatre of his sagacity and prowess, it exists, not inappropriately, an ever-enduring monument to his patriotism and integrity. (See plate 75.)

Descending the eastern slope of the *Sierra de Zuñi*, after a ride of two miles, we reached the *Ojo de Gallinas*, where the still smoking embers of recent fires, in connexion with their relative positions, showed very plainly the *locale* of the last night's encampment of the troops. Finding some good water and grass here, and being considerably fatigued, we gladly halted for an hour to take a lunch and let our animals graze. Resuming our journey, we passed two miles of very hilly pine-barren country—a mile further bringing us to a locality where, immediately on the right of the road, for the first time, some unseemly piles of blackened scoriaceous volcanic rocks make their appearance. Three miles further, in a kind of basin, we met another series of piles of lava debris, covering an area of at least one hundred acres. These piles look like so many irregular heaps of stone coal. A mile further brought us to the entrance of the *Cañon de Gallo*, down which the route continued its course. This cañon, which is a rather narrow one, and walled on either side by sandstone rocks some three hundred feet high, is quite interesting, both as an object of vision and because of the blackened volcanic scoriaceous rocks which crop out from its bottom. Did this cañon exist before the development of these volcanic rocks, or was it the result of that development? Is it not possible that the incalescent mass below, and the gases generated by the heat, in connexion with the ruptures of the superincumbent sedimentary strata which such a condition of things would be like to produce—I say, is it not possible that such a combination of circumstances could have given rise first to the cañon, and then to the volcanic matter cropping from its bottom?

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[*] Since my return to Santa Fe, I find it can be seen from Fort Marcy and other surrounding heights, the air-line distance being as great as one hundred miles.

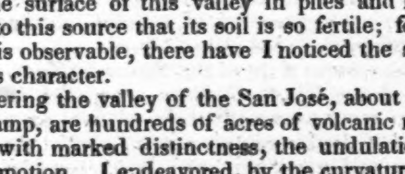
This cañon is quite rapid in the descent of its bottom—more so than any we have seen. Four miles from its entrance, it is almost choked up with large masses of rock, threading which, however, I subsequently learned, the artillery found little or no difficulty. Three miles further, we debouched from the cañon into the broad, beautiful, and fertile valley of the *Ojo de Gallo*. Bearing thence gradually to the right, four miles further brought us, much to our gratification, just after dark, to the camp of the troops, where we found them all rejoicing in the possession of a fine spring, abundant pasture, and the feelings consequent upon the exhilirating effect of a beautiful and far-extended expanse.

We noticed along the road several rattlesnakes which the troops had killed. One of them was very large.

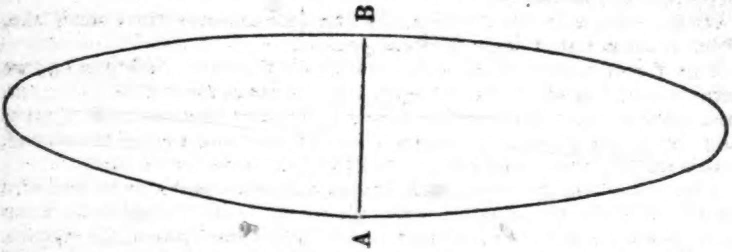
Our day's travel I estimate at thirty-two miles. The march of the troops yesterday, I learn, was 27.14 miles; to-day, 18.49 miles. The latitude of this camp, by observation, is 35° 5′ 17″.

Twenty-ninth camp, near Pueblo of Laguna, September 19.—The troops decamped at 8 a. m., the course, as yesterday, continuing for the day nearly due east. The first six miles was directly across the valley of the Gallo, and then down the valley of the *Rio de San José*. The valley of the Gallo is one of the richest I have seen, its soil being a rich black loam. A great deal of scoriaceous matter, in black angular fragments, lies scattered over the surface of this valley in piles and ridges: and it is doubtless owing to this source that its soil is so fertile; for wherever this igneous product is observable, there have I noticed the soil in proximity to it to be of this character.

Just before entering the valley of the San José, about seven miles from our morning's camp, are hundreds of acres of volcanic rock, a great deal of it exhibiting, with marked distinctness, the undulations of the wave in its oscillatory motion. I endeavored, by the curvature of these waves, to find, by a normal or rather an applicable radius, the crater or source of the outflow, but it resulted in nothing satifactory. I ascended an adjoining hill to overlook the whole field, and found the lava to exist in ridges ranging generally north and south, the curvature being thus:



by a cross section on A B of the ridge or pile, thus:



This seems to point to a swelling or intumescence of the fluid mass, longitudinally—a partial overflow—and a fixedness of condition, caused by refrigeration, before it could spread laterally to any considerable extent, and subsequently a tumbling in at the sides, from disintegrating causes, and the want of subjacent support.

Near this very large field of volcanic matter, the road takes up a long, steep, rocky hill—two miles further bringing us again to the valley of the San José. This hill could probably be avoided by not leaving the valley of the San José at all. Ten miles from our last camp, for about a quarter of a mile, we traversed a sliding rocky hill, where a few picks, crowbars, and spades could, with no great labor, in a short time, make it practicable for wagons. Along this portion of the route, a dense growth of bushes, intertwined with vines, bearing a most delicious grape—in size, that of our winter grape—skirts the stream, and cheered us with its rich luxuriance. The stream here also came tumbling down in a small but beautiful cascade, the din of its waters not being more delightful to the ear than its appearance was to the sight. A mile further, the volcanic rocks which, as far down as this point, have lain along the valley in scattered oblong heaps, terminate. About a mile from this, we crossed the San José, at this point a clear stream, fifteen feet wide and one deep, running swiftly over a gravelly bottom. Willows, I noticed, lined the stream.

The valley, thus far, has been bounded on its left or north side by mésas of a sedimentary character, overlaid by basaltic trap; on the right, or south side, by sedimentary rocks, the superior formation of which is sandstone.

Three miles from our last crossing of the San José, we crossed it again—the valley, from this point, gradually unfolding itself more uninterruptedly, and continuing so down to Laguna, a distance of fourteen miles, within two miles of which we are encamped. All along the valley, for this distance, the land is cultivated in corn and melons, the luxuriance of their growth attesting the good quality of the soil. I also noticed, at different points, a number of circular places upon the ground where wheat had been trodden out by horses. This is the usual mode in this country of separating it from the husk. The cultivators of the soil are Pueblo Indians, and belong to the villages of *Laguna* and *Acoma*. They were very liberal to us in their donations of muskmelons, of which they seem to have a great abundance. I notice that, to preserve them for winter, they peal them, take out the seeds, and then hang them in the sun to day. A dry cedar tree covered with them, for this purpose, presented a very singular appearance.

Within about a couple of miles, the San José expands into a small lake, which is the resort of large flocks of cranes.

This day's march, 28.93 miles, has been the most fatiguing one we have had—the artillery not getting in, on account of the horses giving out, until after dark. The regular infantry, whether the march is short or long, uniformly preserve the same compact form and rate of travel, and, in this respect, are superior to any troops I have ever served with.

The soil along the route has been arenaceous, and a great deal of it good. No *sylva* to speak of, except near the head of the san José, has been seen in the valley, though scrub cedar has dotted the heights. Bunch and gramma grasses have been seen in patches along the way. The cactus has been quite common.

A flock of two thousand head of sheep was seen by us before reaching camp.

This camp, which observation places in latitude 35° 0′ 49,″ has all the requisites of wood, water, and grass.

The *alcalde* of the *Pueblo de Laguna* called to pay his respects to Governor Washington this evening; and a very respectable man he appears to be. He is more at home in American garb than was the alcalde of *Zuñi*.

Thirtieth camp, September 20.—The alcalde of Laguna was again in our camp this morning. He represents to Governor Washington that some persons belonging to the party of California emigrants who passed through his village two or three weeks since, on their way west, tied and forced off one of his people to Zuñi, against his will, and then gave him no compensation; that they drove off eight mules belonging to his people, and even tied the governor, because he would not do an impossibility which they wished to exact of him. He also represented that some Mexicans were endeavoring to get from him a pistol which an emigrant had given him in remuneration for his care of him during his illness. Governor Washington told him that he and his people should defend their property, if necessary, even to the taking of life; and that, no matter how many were sacrificed in this way, the government would sustain them in it; that this was a rule of the government under which he was now living. He also gave him a paper, calling on all persons to respect the rights of his people.

This morning I preceded the troops a short while for the purpose of visiting the Pueblo of Laguna. The houses of this pueblo, I find, are built like the others—terrace fashion, each story forming by its roof a platform or sill for entrance to that above, and the ascent from story to story—of which there are, in some instances, as many as three—being by ladders upon the outside. They are built of stone, roughly laid in mortar, and, on account of the color of the mortar, with which they are also faced, they present a dirty yellowish clay aspect.[*] They have windows in the basement as well as upper stories; selenite, as usual, answers the purpose of window-lights. The pueblo has one Roman Catholic edifice, which, on account of the key not being immediately available, I did not enter. I noticed in its belfry a couple of bells, and on its roof a sort of dial—probably a mock one. Corn in the shuck, after having been boiled, as also strings of red pepper, could be seen hanging up in front of nearly every house to dry. Indeed, the evidences are that these people are quite industrious and thrifty. Their cattle—of which, probably on account of the good pasturage in the vicinity, they seem to have more than any other pueblo—look fine; and their sheep and goat folds—which, as usual, encroach upon the circuit of the towns, much to the annoyance of both sight and smell—show also that they are well supplied with this species of stock. I noticed also about the place a number of carts, of the ordinary lumbering Mexican make. The population of the town is probably about eight hundred.

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[*] The idea which has been entertained that this pueblo is situated on a rocky promontory, *inaccessible* to a savage foe, is incorrect, as wagons find no difficulty in getting up to and passing directly through the town.

Equally incorrect is the idea that the towns of Pojuate, Cebolleta, Covero, and Moquino are made up of houses *four stories* high, built upon *inaccessible* rocky heights. I have, since the Navajo expedition, made a military reconnaissance of the country in which these towns are situated, and therefore speak from personal observation. It is also a mistake to regard the three last-mentioned towns as Indian pueblos; they are *ordinary* Mexican villages.

A large portion of the inhabitants are at this time away, gathering *piñones*, an edible fruit of the piñon, the common scrub pine of the country. The dress of these people is like that of the other Pueblo Indians—the women, as usual, having the calves of their legs wrapped or stuffed in such a manner as to give them a swelled or dropsical appearance. They, like the Zuñis, regard us with considerable reserve; but how could it be otherwise, when they have been so shamefully treated as they have been recently by persons bearing the name of Americans, like ourselves? Common prudence certainly dictates a proper reserve until they can learn by experience that we are not extortioners like some of our forerunners; and this they are begining to learn, for the longer we were among them the more frank and liberal they became.

The troops passing through the pueblo about 11 o'clock, I left the place to accompany them. The course to-day is south of east, and, as yesterday, the road runs along—though not so near—the San José, which it crosses at Laguna. Just as I got out of the town, observing a Mexican packer appropriating to himself a watermelon, right in the face of an old woman who was guarding the patch, in my indignation I rushed upon him full tilt, and the consequence was an instantaneous disgorgement. The many signs which the old woman made to express her gratitude amply testified how deeply she felt the slight act of humanity. Two miles from Laguna, we descended a rocky shelving-place, to get into the valley of the San José. Wagons will find no insuperable difficulty here. This hill descended, and some basaltic trap passed, lying in a short cañon through which the road runs, the Rio de San José is again crossed—the water, which heretofore has been quite clear, now becoming of a clay color. The river at this point is about twenty feet wide, one deep, and has a muddy bottom. The San José crossed, some old ruins appear, perched upon a mésa some one hundred and thirty feet high, immediately on your right. To clamber up to them, I had no little difficulty; and on reaching them, I found they scarcely compensated me for the exertion. They consisted of a few old stone and mortar structures, and some stone *corrals*, (enclosures,) the latter showing signs of having been recently used as sheep-pens. What a barbarous state of things these ruins, which are occasionally seen on almost inaccessible heights, show to have once existed; and how much more glorious their condition now, when the inhabitants can live upon the plains below in comparative ease and quiet, convenient to their fields, water, and stock!

Shortly after passing the ruins, basaltic trap again appears in the valley; and on the left, immediately by the road, gypsum crops out from overlying sandstone. Eight miles from Laguna, an extensive view unfolded itself to our front, of distant blue mountains, *mésa* heights, tableau and conical mounds—a broad expanse of green valley intervening. Just beyond this point appears, on your left, an almost perfect natural *fac simile* of a house, with its chimney-top. About a mile further, to our right, on the far side of the Rio San José, could be seen the remains of a Mexican village called *Rito*, which is represented, and no doubt truthfully, to have been deserted on account of the water of the San José failing at this point. This is the village before referred to as illustrating the fact that at the present day, as in more remote periods, towns are deserted on account of the water near them giving out. (*Ante*, September 17.) A few miles beyond this spot, the colonel commanding noticing a very large herd of sheep moving very hastily away from the command, as if all were not right, I rode off to see how the matter stood. I soon discovered, however, that the flock was under Mexican and not Navajo control, and, from my conversation with the *pastor*, became assured that our apprehensions were groundless. It was beautiful to see the young shepherd carrying in his bosom a little lamb; and it at once suggested to me the force and appropriateness of the sentiment to be found in Isaiah, (chapter 40, verse 11,) expressive of the care of the Saviour for the tender ones of his flock: "He shall feed his flock like a shepherd; he shall gather the lambs with his arm, and carry them in his bosom."

About fifteen miles from Laguna, it being represented by Carravahal that we could get water in the San José, about a mile and a half to the right, we turned off the beaten track to encamp upon the stream. The water of this stream at this point is scarcely an inch in depth, and of a bright red color. Its constancy cannot be depended upon. Good bunch grass is found in the vicinity, and wood about half a mile off.

The road to-day has been generally quite good. Gypsum crops out on the left all along the way for the last six miles. The soil has been argillaceous, and, in spots of limited extent, looks as if it might produce pretty well. The sylva has been the dwarf cedar, sparsely scattered.

The Mexican mounted militia were discharged this evening, the colonel commanding tendering them his thanks for their services, and strongly reprobating the conduct of those who had deserted the command, and whom, he hoped, they would, on their return to their homes, hold up to the just ignominy which they deserved.

Thirty-first camp, Atrisco, opposite Albuquerque, September 21.—The wolves, last night, in the vicinity of our camp, were more uproarious than usual.

The troops resumed the march at 7 a. m., the course for the day being about north of east. The country to-day has been generally rolling in the direction of our progress—for the first six or seven miles, *mésa* heights, with intervening areas of prairie land, being seen on our left. Soon after leaving camp, we could see ahead of us the serrated mountains of the Rio Grande stretching from north to south, looking blue and beautiful, and further to the south a couple of twin peaks lifting themselves high and conspicuously. Between four and five miles on our route, the highest points of the Santa Fe mountains showed themselves for the first time, bearing northeast, the prospect suggesting the pleasing thought that our labors would soon terminate. Eight miles further brought us to the Rio Puerco, in the bed of which not a drop of water could be seen. The broad bed of this so-called river is about one hundred feet across, the narrower about twenty feet. A few cottonwood trees skirt the banks. Between three and four miles beyond the Puerco, earthy limestone crops out from the soil. Proceeding a few hundred yards further, we reached the summit of a swell of land, whence could be seen the broad valley of the Rio Grande, the mountains just back of Albuquerque now showing themselves in all the magnificence of their proportions. Shortly after, much to our relief, we met a wagon loaded with barrels of water which had been sent out by Major Howe, from Albuquerque, agreeably to the instructions of the colonel commanding, forwarded by express. The men were exceedingly thirsty, and drank correspondingly. When within seven miles of the Rio Grande, we caught, much to our delight, the first sight of its glimmering waters. A mile further, we fell in with a couple more of wagons from Albuquerque, loaded with water and forage for the troops. The river, however, being but five or six miles ahead, the order was given to continue forward. Two miles more brought us to where we could see the town of Albuquerque quartering on our left; houses could also be seen lying scattered for miles up and down the river, the cottonwood very sparsely dotting its banks. Just at dusk, we were winding our way through the little village of *Atrisco*, situated on the Rio Grande, opposite Albuquerque—our camp for the night being to the north of the town, in the midst of a fine plot of pasturage, convenient to the river.

The soil to day has been alternately argillaceous and arenaceous. The face of the country presented one expanse of barren waste, thinly sprinkled with dwarf cedar. The last half of the road was, a good portion of it, very heavy on account of sand, and in places quite hilly. The day's march has been 28.33 miles.

We met on the road to-day three Mexican men on horseback, two of them each with a woman behind him, and the third with a very pretty child in his arms. This is a common mode of travelling among them—the woman, however, most generally sitting in front. These women had their faces plastered with a sort of whitewash, also a very common fashion—the object being, as I am told, to protect them from the weather. Not unfrequently they are covered with a red pigment—but for what purpose, unless for the same reason the whitewash is used, I cannot divine. The fact, however, of their more frequently putting it on in blotches, would seem to point to some other object. But, whatever be the purpose, they in both instances give to the face a frightful and disgusting appearance.

Sad news has reached us to-night. The mail from the States, for which we all have been looking with so much anxiety, is reported to have been cut off by the Navajos, on its way out to us, at *Chelly*. This is a serious disappointment to us all.

Algadones, September 22.—The expedition, in its *integrity*, terminated at *Atrisco*. The different commands, artillery and infantry, are to march independently, each under the head of their respective chiefs, to Santa Fe, as soon as practicable. Colonel Washington and staff crossed over to Albuquerque this morning at the ford. The river at this point is probably about three hundred yards wide, the stream rapid, its depth four feet, and its bottom of a somewhat quicksand character. During the higher stages of the water, the river is too deep to be forded; but, though this is the case at the several fords along its course, boats seem never to be resorted to by the Mexicans. Indeed, I have not seen a single one since I have been in the country.

Albuquerque, for a Mexican town, is tolerably well built. Its buildings, like all I have seen inhabited by Mexicans, are of a right parallelopipedon shape, constructed of adobes, (blocks of sun-dried mud,) and arranged generally on the four sides of a rectangle, thus creating an interior court (*pateo*) upon which nearly every one of the apartments opens. There is generally but one exterior or street entrance; and this is generally quite wide and high, the usual width being about six feet, and the height seven. They appear to be made thus wide, at least as far as I have been able to discover, to enable the burros (asses) and other animals to go through with their packs. They are generally secured by double doors. There are two or three buildings in the town with extensive fronts and *portales*, (porches,) which look, for this country, very well—one of them being the house formerly occupied by Governor Armijo. There is a military post at this place, garrisoned by a couple of companies of dragoons, the commanding officer being Major M. S. Howe, of the 2d dragoons. The population of the town and its immediate suburbs is probably about one thousand. Wood for fuel has to be drawn a distance of twenty-five miles.

Colonel Washington and myself, after partaking of the generous hospitality of Major Howe and his lady, left at two o'clock for Sante Fe, it being our intention to tarry all night at Algadones, the usual stopping-place for travellers either way between Albuquerque and the former place. Mr. Calhoun and Captain Ker were in company, the latter having kindly provided the vehicle which conveys us hither. On our left was the Rio Grande, and on our right, some eight or nine miles off, the lofty mountains of Albuquerque and Sandia. The valley of the Rio Grande for a number of miles above Albuquerque, presents the finest agricultural and pastoral country I have yet seen in New Mexico. The breadth of the valley under cultivation is, probably, not quite a mile. The clemency of the climate—it is some two thousand feet lower in altitude than Santa Fe—is such as to cause the grape and peach, as well as the melon, to grow to perfection. The corn also looks luxuriant and productive.

About six miles from Albuquerque, we passed the inconsiderable village of *Alameda*, the most conspicuous building in it being the Roman Catholic church. Six miles further, we passed by the pueblo of *Sandia*, a town similar in the style of its buildings to the other pueblo villages—the usual quantum of ladders and ragged-looking sheep and goat-pens discovering themselves about the premises. Just after leaving Sandia, within the space of about a mile along the road, are between sixty and seventy piles of stones, which are said to designate the localities where as many Navajos fell in a battle which the Pueblo Indians had with that people, some years since. Six miles more brought us to the small village of *Bernalillo*, its vicinage presenting some respectable-looking *rancho* residences, surrounded by well-cultivated grounds, which are fenced by *adobe* walls. Some of these walls are twelve feet high, and crowned with the cactus, to prevent their being scaled. Another six miles traversed, we found ourselves at Algadones, our stopping place for the night. This miserable-looking village contains about forty houses, and has a population of some two or three hundred souls. Subsistence, such as it is, and forage, can be obtained here. The inn, kept by a Mexican, is far from being such as it should be, either as respects cleanliness or the character of the *cuisine*. Miserable muddy coffee, a stew made of mutton smothered in onions, half-baked *tortillas*, (thin corn-cakes,) and a few boiled eggs, constitute the best meal it pretends to furnish. I do not know why it is, but I have not yet drunk a cup of coffee or eaten a *tortilla* of Mexican preparation, without its creating in some degree a sensation of nausea at the stomach. There is certainly great room for improvement in the cuisine of this country. The only eatable I have yet partaken of which does not become tainted by their cookery is the egg in its boiled state, and this is doubtless owing to its being protected by the shell.

The road from Albuquerque to Algadones is generally sandy, and in some places, on account of it, quite heavy.

Santa Fe, September 23.—Having, by a few moments of experience, last evening, become convinced that if I lay within doors all night I should not only have a fight with rabid insects, but have also great violence done to my *olfactories*, Lieutenant Ward and myself slept in the wagon; and a pretty comfortable night we have had of it.

We left Algadones for Santa Fe at half-past 7 a. m., our general course for the day being about northeast, and we taking the road *via* Delgado's *rancho*, (farm,) the usual wagon-route between the two places.

Basaltic trap, I noticed, crowned the *mésa* heights on the west side of the Rio Grande between Algadones and San Felipe, the inferior formation appearing to be sandstone, horizontally stratified.

Six miles above Algadones, we passed the pueblo of *San Felipe*. This town is situated at the foot of the *mésa*, on the west side of the Rio Grande, the river contracting at this point to a width of probably less than one hundred yards. This pueblo, like the others, has its two-storied houses, accessible by ladders; but neither it nor Sandia is as purely Indian in the style of its buildings as the other pueblos we have visited. It is, however, rather a neat-looking village, the Roman Catholic church, as usual, showing conspicuously. The ruins of what is usually called *Old San Felipe* are plainly visible, perched on the edge of the mésa, about a mile above the present town, on the west side of the river. These ruins are generally, I believe, regarded as indeed the remains of Old San Felipe; but a very intelligent Indian residing in the present town of that name has informed me that they are the remains of a people who have long since passed away, and of whom they know nothing. Half a mile above San Felipe, the road branches off—one branch extending to Santa Fe by the way of Santo Domingo, and the other to the same place by the way of Delgado's rancho, (farm.) The former branch is, probably, three or four miles shorter than the latter, and is on that account generally preferred for pack animals. The latter, however, is so much the better wagon-road as to cause it to be preferred for wheeled vehicles.

About twenty miles from Algadones, we crossed the Rio Galisteo, the road following it up for some distance. Where we first met it, not a particle of water could be seen in its bed; but at the point where we left it, about half a mile above, it was a running stream. Colonel Washington informs me that in Chihuahua he traversed the bed of a river which was perfectly dry when the head of the column commenced crossing, but within half an hour, before the whole column had passed over, it was scarcely fordable.

Some fine specimens of trap dike are discoverable just after crossing the Rio Galisteo—one of them resembling, as nearly as may be, an artificial wall; another, the dark-colored remains of an old pueblo. About six miles further, we crossed the small affluent of the Rio de Santa Fe, on which Delgado's *rancho* is situated. Travellers sometimes make this rancho a stopping-place for the night between Santa Fe and Albuquerque. Sixteen miles more traversed, at half-past three in the afternoon, much to the gratification of the whole party, we reached Santa Fe.

The road from Algadones to Santa Fe is generally very good, the only exception being a few short steep hills.

The face of the country to-day has presented, with some trifling exceptions—along the Rio Grande, at Delgado's, and between Agua Fria and Santa Fe—one extended barren waste of uncultivable soil.

Santa Fe, September 26.—The artillery, under Major Kendrick, reached this place yesterday; the infantry, under Captain Sykes, to-day.

Character of the soil from the eastern base of the Sierra de Tumecha to Chelly, and thence to Santa Fe, by the return route.[*]

It may be thought, from the frequent mention of good land along the route since we left the eastern base of the Tumecha mountains, on our return trip, that fertility has characterized the country generally through which we have passed since that period. But, lest so erroneous an impression may obtain, I think it proper to observe that, for the greater portion of this distance, the road has threaded the valleys of the country, and therefore the land has presented itself such as I have described it. The country, it is true, has exhibited a greater extent of cultivable soil than that traversed between Santa Fe and the Tumecha mountains, but yet, in comparison with the whole area of surface, it should still be considered as but a very *small fractional part*.

The idea I pertinaciously adhered to when in the States, before ever having seen this country, was, that, besides partaking of the bold characteristics of the primary formations, rocks confusedly piled upon rocks, deep glens, an occasional cascade, green fertile valleys—the usual accompaniments of such characteristics with us in the States—it was also, like the country of the States, generally fertile, and covered with verdure. But never did I have, nor do I believe anybody can have, a full appreciation of the almost universal barrenness which pervades this country, until they come out, as I did, to "search the land," and behold with their own eyes its general nakedness. The primary mountains present none of that wild, rocky, diversified, pleasing aspect which they do in the United States, but, on the contrary, are usually of a rounded form, covered by a dull, lifeless-colored soil, and generally destitute of any other sylva than pine and cedar, most frequently of a sparse and dwarfish character. The sedimentary rocks, which, contrary to my preconceived notions, are the prevalent formations of the country, have a crude, half-made-up appearance, sometimes of a dull buff color, sometimes white, sometimes red, and sometimes these alternating, and, being almost universally bare of vegetation, except that of a sparse, dwarfish, sickening-colored aspect, cannot be regarded as a general thing—at least, not until familiarity reconciles you to the sight—without a sensation of loathing. The face of the country, for the same reason—the general absence of all verdure, and the dead, dull, yellow aspect of its soil—has a tendency to create the same disagreeable sensation. I desire it, therefore, to be borne in mind that, when I have in the course of my journal spoken of *fertile* soil, or of *beautiful* prospects, I have spoken *relatively*—that is, in relation or contrast with the other portions of the country in which these exceptions have occurred, ***and not in relation to our more favored domain in the States.***

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[*] See *ante*, thirteenth camp, August 31, for general character of the country traversed east of the Sierra de Tumecha.

Conclusion.

Before concluding my journal, I think it proper to bring to the notice of the department the expediency of having the country examined west of the Pueblo of Zuñi, for the ascertainment of a wagon-route from the former point to the Pueblo de los Angeles, or, failing in this, to San Diego.

The route from Santa Fe to Zuñi—a distance of two hundred and four miles—is, with a very slight application of labor, practicable for wagons; and the guide, Carravahal, who has been down the Rio de Zuñi to its junction with the Colorado of the West, says it continues practicable all the way along this tributary to the point mentioned.

Mr. Richard Campbell, of Santa Fe, since my return, has informed me that, in 1827, with a party of thirty-five men and a number of pack animals, he travelled from New Mexico to San Diego by the way of Zuñi and the valley of the Rio de Zuñi, and found no difficulty throughout the whole distance. He further states, there is no question that a good wagon-route, furnishing the proper quantum of wood, water, and grass, can be found in this direction, both to San Diego and the *Pueblo de los Angeles*. He informs me, however, that, in order to reach the Rio Colarado, the Rio de Zuñi would have to be diverged from at the falls, within a few miles of its confluence with the Colorado, and a valley running generally southwardly followed down to its junction with the valley of that river. He has further informed me that above the mouth of the Rio de Zuñi there is a ford, called *El Vado de los Padres*, (the Ford of the Fathers,) to which a route leads from Zuñi by the way of the pueblos of the Moquis This route, which he represents as much shorter than the other, is, however, on account of the difficulty of crossing the cañon of the river at the ford, only practicable for pack animals.

The Colorado, when he crossed it, near the mouth of the Rio de Zuñi, was fordable; but he is of the opinion that it might not always be found so.

It is proper for me, however, in this connexion, to state that I have conversed with two or three trappers, who represent that the Colorado is so deeply cañoned from its mouth upwards as to make a wagon-route in the direction proposed impracticable. These persons, however, have at the same time stated that they know nothing personally of the *continuous* existence of this cañon, never having been immediately on the ground: their representations, then, should not counterbalance the statement of those who have.

I have introduced the above representations, to which I might add those of other persons, corroborative of the statements of Messrs. Carravahal and Campbell, in order that the department, being advised of the true state of the information attainable upon the subject, might take such action and give such instructions in the premises as, in its judgment, it might deem expedient.

By reference to the map, it will readily be seen that a route from Santa Fe to Pueblo de los Angeles, in the direction suggested, running as it would intermediate between the southern detour of Cook's route and the northern detour of the "Spanish trail" route, or, in other words, as direct as possible, would not only be shorter by probably as much as three hundred miles than either of these routes, but, passing by the pueblos of Laguna and Zuñi, and possibly of the Moquis, situated still further westward, would furnish supplies of subsistence and repairs of outfit for certainly the first two hundred, if not three hundred, miles of the way—*desiderata* certainly not to be disregarded.

Respectfully submitted.

JAMES H. SIMPSON,
First Lieutenant Corps Topographical Engineers.

APPENDIX A.

Lieutenant Simpson's report to Lieutenant Colonel Washington of a reconnaissance with a view to the establishment of a post on the borders of the Navajo country.

SANTA FE, *October* 10, 1849.

SIR: In accordance with orders No. 35, current series, issued from headquarters of department No. 9, requiring me to make a reconnaissance of the country in the vicinity of Cebolleta, with a view to the selection of a suitable position for a post in that vicinity, I have the honor to report that I have made the reconnaissance required by said order, and present the following as the result.

The point I would suggest as the most suitable one for the location of a post is the small settlement called Cebolletita, situated two and a quarter miles to the south of, and in the same valley with, Cebolleta, and on the road leading from the Pueblo of Laguna to Cebolleta. My reasons for this selection are involved in the following considerations:

The Navajo nation is the principal one to which the post in question, in its military aspects, is to have relation. Coming from the mountains immediately to the *north* and back of Cebolleta, (see map,) and passing by Cebolleta and Cebolletita, is an avenue of approach from the Navajo country to the Mexican settlements in that and the neighboring quarter to the east of it. To the *east* of the selected point, I was informed there was another or other avenues of approach. To the *west*, by the way of the valley of the Rio de San José and one of its tributaries, there are two other avenues of descent to be guarded against. Now, as the number of posts to be established is but one, it is obvious that its position should be such as to affect the greatest possible area of country, and that in the most prompt and effective manner. This position, evidently, then, should be a central one. This condition is fulfilled in the case in question by locating the post at the place stated—Cebolletita.

The next considerations are, that the locality selected is where the essentials wood and water are abundant for the troops, grass abundant for the stock, and corn doubtless to be had in sufficient quantities from that and the neighboring villages.

In regard to the quarters at the point referred to, there are three *ranchos*, upon which are buildings suitable—with some slight repairs, in the case of one—for the quarters of the troops. These buildings belong, respectively, to Juan Chavez, Manuel Chavez, and José Francisco Arogonas; and the order in which they are named is the order of their convenience in respect to wood and water. The first two, I was assured, could be rented; the third, in all probability, if necessary, could be also.

In regard to the facilities of communication, there is a pack-mule route from Cebolletita to Alburqueque, the distance between the two places being represented to be from forty-five to fifty miles. There are also two wagon-roads from Cebolletita to Albuquerque—one by way of the Pueblo de Laguna, which we found pretty good; and the other, a more direct one, by the way of Alamo, said to be the shorter, and equally good. The distance to Albuquerque by the Laguna road is: to Laguna, sixteen miles; thence to Albuquerque, forty-five miles—in all, sixty-one miles.*

The valley in which it is proposed to locate the post, I would further remark, besides being the most pleasant one I saw within the circuit of my reconnaissance, is more thickly populated with Mexicans than any in that region.

Another advantage the locality possesses is its proximity to the friendly Navajos—a position which enables them to be reciprocally protected by our troops, and at the same time give that information in relation to their neighbors which might be of the highest importance to us in our relations with them.

I should not fail to report, that the escort accompanying me was commanded by Lieutenant John Buford, of the 2d dragoons, whom I ever found willing and effective in his co-operation with me in the discharge of my duties.

I am, &c.,

J. H. SIMPSON,
First Lieut. Corps Topographical Engineers.

To Lieutenant Colonel J. M. Washington,
Commanding 9th Military Department.

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*Since the etablishment of the post at Cebolleta, a pack-mule route has been discovered from that post to Santa Fe by the way of the Pueblo of Jemez, which, doubtless, is from fifteen to twenty miles shorter than by the way of Albuquerque.

APPEN

A comparative vocabulary of words in the languages of the Pueblo or civil

Name of the object in English.	In the language of the Pueblo In			
	Santo Domingo, San Felipe, Santa Anna, Silla, Laguna, Pojuate, Acoma, Cochiti. (1.)	San Juan, Santa Clara, S. Aldefonso, Pojnaque, Nambe, Tesuque. (2.)	Taos, Picoris, Sandia, Isleta. (3.)	Jemez, (old Pecos.) (4.)
God	Dios, (Sp.) Montezuma, they say, is synonymous with Dios.	Give no other word than the Span. Dios.	Huam-may-ah	Pay. (Same as for sun.)
Heavens	......	......	......	......
Sun	......	Pah	Hoo-len-nah	Pay
Moon	......	Poy-ye	Pan-nah	Pah-ah
Star	She-cat	A-doy-e-ah	Hah-he-glan-nah	Woon-hah
Cloud	......	......	......	......
Earth	Hah-ats	Nah	Pah-han-nah	Dock-ah
Man	Hats-see	Say-en	Tah-hah-ne-nah	Shu-o-tish
Woman	Nai-at-say	Ker	Clay-an-nah	Ste-osh
Wife	Kar-nats-shu	Nah-ve-so	Could give no word	Ne-ohoy
Boy	O-nue	An-noh	Dy-you-oo-nah	......
Boy (infant)	Sah-wish-sha	......	......	Ah-cue
Girl	Koy-yah	An-ugh	Koo-ac-lon-nah	......
Girl (infant)	Sah-wish-sha	......	......	Fond-o-bos-che
Head	Nash-can-ne	Pum-bah	Pi-ne-nah	Chit-cnous
Forehead	Cop-pay	Sic-co-vah	Pah-hem-nah	Wah-pay
Face	Ko-wah	Cho-ay	Cha-gah-neem-may	Tcho-tah
Eye	Kan-nah	Chay	Che-nay	Saech
Nose	Kar-wish-she	Shay	Poo-ae-nak	For-saech
Mouth	Tsee-kah	Sho	Clah-mo-e-nah	E-ae-quah
Teeth	Har-at-chay-nay	Moo-ah	Moo-en-nah-en-hay	Goo-whan
Tongue	Wah-at-chin	Hah	May-oon-on-en-ah	Ain-lah
Chin	Tyars-kah	Sah-boh	Clah-bon-hay	Ah-tish
Ear	Kah-se-pah	O-ye-o	Tag-lay-o-nay	Wash-chish
Hair	Har-tran	Poh	Pah-han-nay	Fore-lah
Neck	Wit-trah-ne	Kah	Gah-ne-may	Toe
Arm	Kah-u-may	Ko	Hah-en-nay	Heh
Elbow	......	......	......	......
Hand	Kah-mosh tay	Mah	......	Mah-tish
Finger	......		......	......
Breast	Quaist-pah	Pe-ah	Pah-ah-kay-nay-ne-may	Pay-lu
Leg	Kay-ah-kah	......	Pah-nay	Hong
Knee	......	......	......	......
Foot	Kar-tay	Ah	E-en-en-nah	Awn-dash
Deer	Ke-ah-ne	Pah-ye	Tah-mean-mah	Pah-ah
Buffalo	Moo-shats	Kah	Kah-nah-neem-mah	Toss-chach
Horse	Kah-yai-oh. (Probably a corruption of the Span. *caballo.*)	As in Span.	Kah-wan-nah. (Probably a corruption of the Spanish.)	Gu-nah
Serpent	Skers-ker.	Could give no word.	Hatch-oo-nah	Pay-chu-tah

DIX B.

ized Indians of New Mexico and of the wild tribes inhabiting its borders.

dians of—		In the language of the wild tribes denominated—		
Zuñi. (5.)	Moqui. (6.)	Navajos. (7.)	Ticorillas, (a branch of the Apaches.) (8.)	Utahs. (9.)
Ho-ac-wo-nac-we-o-nah.	Toc-kill	Yuah-del-kill	Dios. (Span.)	
…………	Toke-pay-lah			
Yat-tock-kah	Tah-wah	Cho-hae-nae-i	…………	Tap.
…………	Moo-yah	Old-chay	…………	Mah-tots
Mo-yat-chu-way	…………	Del-gay-he	Shah	Quah-lantz.
…………	O-mow			
Ou-lock-nan-nay	Touch-quae	Ne	Nay	
Oat-se	Se-ke-ah	Ten-nay	Tin-lay	Toe-on-pay-ah.
O-care	…………	Es-ten-nay	Tay-kay	Nai-jah.
Could give no word	…………	Cha-at	Pe-aug-oo-le	
Art-se-ke	…………	…………	Is-ke-e	Ah-pats.
…………	…………	Che-yaz		
Tya-nah	…………	…………	Mem-che-to (Doubtless a corruption of *muchachitos*—Spanish.)	Mah-mats.
We-at-zah-nah	…………	Chay-way		
O-shuck-quin-nay	Qua-tah	Hut-se	It-se	Tuts.
Huck-kin-nay	Col-ler	Hut-tah	Pin-nay	Mut-tock.
No-pon-ne-nay	…………	Hun-ne	…………	Koo-elp.
Too-nah-way	Po-se	Hun-nah	Pin-dah	Put-ty-shoe.
Ne-lin-nay	Ya-kuck	Hut-chin	Witch-chess	Mah-ve-tah.
Ac-cah-tin-nay	Mo-ah	Huz-zay	Huz-zay	Timp.
O-nah-way	Tah-mah	How-go	E-gho	Tong.
Ho-nin-nay	Ling-a	Hot-so	E-zah-te	Ah-oh.
Kiay-which-chin-nay	Ke-at	Hi-ot-ze	E-zay-tah	Hah-nock-quell.
Sah-schuck-tin-nay	Nook-a-wuck	Hut-chah	Wick-yah	Nink.
Ti-ah-way	Hay-me	Hot-se	It-se	Su-ooh.
Kiss-sin-nay	Qua-pe	Huck-quoss	Wick-cost	Kolph.
Ar-se-way	Mah-at	Hut-con	Wit-se	Poo-ir.
…………	Cher-ber			
Shon-che-way	Mock-tay	Hul-lah	Wis-lah	Mas-seer.
…………	Mah-latz			
Po-at-tan-nay	Toe-witz-kah	Hay-yete	Ko-jay-ae	Pay.
Sack-que-way	Ho-kah	Hut-yah	Wit cha-te	
…………	Tom-me			
Wake-que-a-way	Her-kuck	Hut-kay	Wit-kay	Namp.
…………	…………	Pay-ye	Pay-ah	
Too-she-kay-one-na-way	…………	A-yan-ne	Yah-nay	
Too-she	As in Spanish	Kle	Shle	Kah-vah.
Che-to-lah	…………	Kot-so	Ko-oh	Toe-weroe

APPENDIX B—

Name of the object in English.	In the language of the Pueblo In			
	Santo Domingo, San Felipe, Santa Anna, Silla, Laguna, Pojuate, Acoma, Cochiti. (1.)	San Juan, Santa Clara, S. Aldefonso, Pojuaque, Nambe, Tesuque. (2.)	Taos, Picoris, Sandia, Isleta. (3.)	Jemez, (old Pecos.) (4.)
Rattlesnake	Shrue-o-we	Pay-yoh	Pi-ho-own	Kae-ah-vae-lah
Dog	Tish	Cher	So-dor-nah	Ca[illegible]-nu
Cat	Moos	Moo-sah	Moo-se-e-nah	Mocn-sah
Fire	Hah-kan-ye	Tah	Pah-an-nah	Twa-ah
Wood		Sun		
Water	Tseats	Ogh	Poh-ah-oon	Pah
Stone				Ke-ah-ah
Cactus	Ae-mocch-te	Sow-wah		Te-ah
Corn				
Bean				
Bread	Pah. (Probably a corruption of the Span. *pan.*)	As in Span.	Ah-coon-nah	Zo-tane-bae-lah
Flesh	Ish-sha-ne	Pe-we	Zoe-an-nay	Gu-nay-nat-si
Bow				
Arrow				
Fusil	O-nistz	Pe-quar-re	Tah-we-nan	Tah-his-tah
Sword				
Spurs				
Whip				
Pipe				
Hat				
Friend		Ke-nah		

NOTES.

(1.) Obtained by Lieutenant Simpson from U-kat-te-wah, (all the world looks as the man that sings,) governor of the pueblo of Santo Domingo.

(2.) Obtained by Lieutenant Simpson, through Mr. E. M. Kern, from an Indian belonging to the pueblo of San Juan.

(3.) Obtained by Lieutenant Simpson, through Dr. Horace R. Wirtz, U. S. A., from an Indian belonging to the pueblo of Taos.

(4.) Obtained by Lieutenant Simpson from an Indian belonging to the pueblo of Jemez, by name Da-ha-du-lu, (eagle.)

(5.) Obtained by Lieutenant Simpson from an Indian belonging to the pueblo of Zuñi, by name, as he wrote it himself, Lilu. Mexican name, Juan Christoval.

(6.) Obtained by Lieutenant Simpson from a Moqui Indian who happened to be at Chelly when the troops were there.

(7.) Obtained by Lieutenant Simpson from a friendly Navajo chief, by name Tus-ca hogont-le. Mexican name, Sandoval.

(8.) Obtained by Lieutenant Simpson from an Apache Indian, a prisoner in the guard-house at Santa Fe.

(9.) Obtained by Lieutenant Simpson from an Utah Indian, a prisoner in the guard-house at Santa Fe.

Continued.

dians of—		In the language of the wild tribes denominated—		
Zuñi. (5.)	Moqui. (6.)	Navajos. (7.)	Ticorillas, (a branch of the Apaches.) (8)	Utahs. (9.)
....	....	Klish		
Wat-so-tah	Po-ku	Klay-cho.	Klin-cha-ah ..	Sah-reets.
Moo-sah	....	Moose	Moo-sah	Moo-sah.
Mack-ke	Day-bor	El-chin.	Cone	Coon.
....	Ser-her-be	....	....	Oof.
Ke-a-o-way	....	Toe	Ko	Pah.
Tze-nan-nay				
Melah	Kar-uk			
....	Se-ka-mo-se			
Moo-hen-nay	....	Pah. (Probably a corruption of the Span. *pan.*)	Klay-tun-che-chay.	
She-lay	....	Et-se	It-se	
....	Au-ah			
....	....	Ho-huck		
Toe-o-an-nan-nay	A-muck-te	Pay-dil-ston ..	Jeh-kay	
....	Le-po-wah			
....	Le-pom-uck-ke ..			
....	Wo-bock-pe			
....	Chong			
....	Pa-ta-nock-a-chee			

NOTES.

In all such syllables as ah, mah, nah, tah, &c., *a* has the same sound as in fat.
In all such syllables as ay, may, nay, kay, &c., *a* has the same sound as in fate.

The following Indian names were obtained by Lieutenant Simpson, through Mr. R. H. Kern, from Indians belonging to the pueblos named:

The Indian name of the pueblo of		Santa Anna	is Tom-i-ya.
Do	do	Santo Domingo	is Ge-e-way.
Do	do	Cochiti	is Ko-cke.
Do	do	Silla	is Tse-ah.
Do	do	San Felipe	is Ka-lis-cha.
Do	do	Pecos	is A-cu-lah.
Do	do	Jemez	is Ha-waw-wah-lah-too-waw.

I am informed that the Indians of the Pueblo de Lentes have lost their original tongue, and now speak entirely the Spanish language.

The only tribes which, in the above vocabulary, discover any obvious affinity in their languages, are the Navajos and the Ticorillas. It is, however, somewhat remarkable that the word for cat, (moose,) with some slight variations, should be found common to them all.

APPENDIX C.

Assistant Surgeon Hammond's description of a room found among the ruins of the Pueblo Bonito.

Cañon de Chai, Upper California,
September 7, 1849.

Sir: At your request, I send you a description of a room that I saw, in company with Mr. Collins, of Santa Fe, in the ruins of the Pueblo Bonito, in the Cañon of Chaco, on the 28th ult.

It was in the second of three ranges of rooms on the north side of the ruins. The door opened at the base of the wall, towards the interior of the building; it had never been more than two feet and a half high, and was filled two-thirds with rubbish. The lintels were of natural sticks of wood, one and a half to two and a half inches in diameter, deprived of the bark, and placed at distances of two or three inches apart; yet their ends were attached to each other by withes of oak with its bark well preserved. The room was in the form of a parallelogram, about twelve feet in length, eight feet wide, and the walls, as they stood at the time of observation, seven feet high. The floor was of earth, and the surface irregular. The walls were about two feet thick, and plastered within with a layer of red mud one fourth of an inch thick. The latter having fallen off in places showed the material of the wall to be sandstone. The stone was ground into pieces the size of our ordinary bricks, the angles not as perfectly formed, though nearly so, and put up in break-joints, having intervals between them, on every side, of about two inches. The intervals were filled with laminæ of a dense sandstone, about three lines in thickness, driven firmly in, and broken off even with the general plane of the wall—the whole resembling mosaic work. Niches, varying in size from two inches to two feet and a half square, and two inches to one and a half feet in horizontal depth, were scattered irregularly over the walls, at various heights above the floor. Near the place of the ceiling, the walls were penetrated horizontally by eight cylindrical beams, about seven inches in diameter; their ends were on a line with the interior planes of the walls they penetrated, and the surfaces of them perpendicular to the length of the beam. They had the appearance of having been sawed off originally, except that there were no marks of the saw left on them; time had slightly disintegrated the surfaces, rounding the edges somewhat here and there. Supporting the floor above were six cylindrical beams, about seven inches in diameter, passing transversely of the room, and at distances of less than two feet apart—the branches of the trees having been hewn off by means of a blunt edged instrument. Above, and resting on these, running longitudinally with the room, were poles of various lengths, about two inches in diameter, irregularly straight, placed in contact with each other, covering all the top of the room, bound together at irregular and various distances, generally at their ends, by slips apparently of palm-leaf or marquez, and the same material converted into cords about one fourth of an inch in diameter, formed of two strans, hung from the poles at several points. Above, and resting upon the poles, closing all above, passing transversely of the room, were planks about seven inches wide and three-fourths of an inch in thickness. The width of the plank was uniform, and so was the thickness. They were in contact, or nearly so, admitting but little more than the passage of a knife blade between them, by the edges, through the whole of their lengths. They were not jointed; all their surfaces were level, and as smooth as if planed, excepting the ends; the angles as regular and perfect as could be retained by such vegetable matter. They are probably of pine or cedar, exposed to the atmosphere for as long a time as it is probable these have been. The ends of the plank, several of which were in view, terminated in a line perpendicular to the length of the plank, and the plank appears to have been severed by a blunt instrument. The planks—I examined them minutely by the eye and the touch, for the marks of the saw and other instruments—were smooth, and colored brown by time or by smoke. Beyond the plank nothing was distinguishable from within. The room was redolent with the perfume of cedar. Externally, upon the top, was a heap of stone and mud, ruins that have fallen from above, immovable by the instruments that we had along.

The beams were probably severed by contusions from a dull instrument, and their surfaces ground plain and smooth by a slab of rock; and the plank, split or hewn from the trees, were, no doubt, rendered smooth by the same means.

Very respectfully, your obedient servant,

J. F. HAMMOND,
Assistant Surgeon U. S. Army.

First Lieut. J. H. Simpson,
Corps Topographical Engineers, U. S. Army.

Ex.—10

APPENDIX D.

Schedule of minerals collected by Lieutenant J. H. Simpson, corps of topographical engineers, along the route from Santa Fé, New Mexico, to Chelly, in the Navajo country, via Santa Domingo, Jemez, and Pass Washington of the Sierra de Tunéchá, and from Chelly back to Santa Fé, by the way of Zuñi, Laguna, and Albuquerque, in the fall of 1849.

No. of specimen.	Locality.			Remarks.
	Name.	Latitude.	Longitude.	
		Deg. min. sec.	*Deg. min. sec.*	
1	Valley of the Rio Jemez.	35 46 00 N..	106 47 00 W.	Found about an abandoned furnace.*
2	........do.........	35 48 00	106 48 00	Incrustations about mouth of Los Ojos calientes (hot springs.) Thermometer, when immersed, rose to 169° Fahrenheit. Eggs were cooked in from 15 to 20 minutes, and venison in a much shorter time. Boiling point of water at the Pueblo of Jemez several feet lower in altitude, 190°.
3	Cañon de Penasca....	35 34 00	106 57 00	
4	.......do...........	35 38 00	107 00 00	
5	Cañon de la Copa	35 40 00	107 11 00	Found in thin seams in sandstone formation.
6	.......do..........	35 40 00	107 11 00	Found in crevices of sandstone rock, and sometimes adhering to the face of the rock.
7	Sierra Madre (or highlands) dividing the waters of the Atlantic from those of the Pacific.	35 51 00	107 29 00	Scoriaceous matter protruding through an argillaceous rock which is burnt to different degrees of calcination and underlaid by a friable sandstone of a dirty yellowish color.
8	Sierra de los Mimbres.	35 51 00	107 29 00	Broken off a stump, which, by falling over, had split into two parts. Length of stump 4 feet diameter; in its integrity 2½ feet. Some stumps still standing upright, *in place*, upon the surface of a very shallow basin. Bituminous coal cropping from the soil in close proximity. Drawings of these petrefactions accompany my report.
9	Pueblo Pintado, (one of the ruins of Chaco.)	35 58 00	107 47 00	A fragment of a stone taken from a front face of the structure; its thickness about the ordinary thickness of the building material.

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*Believing that the department could submit the specimens to a competent geologist for examination, I have thought it would best comport with accuracy to defer presenting their scientific names until they could be given by such authority.

APPENDIX D—Continued.

No. of specimen.	Locality.			Remarks.
	Name.	Latitude.	Longitude.	
		Deg. min. sec.	*Deg. min. sec.*	
10	Cañon of Chaco....	....	....	Found on the side of a knoll.
11	Tunéchá valley......	....	....	Found in fragments ever since we left the valley of the Rio Puerco. Bituminous coal of a slaty character, in connexion with arenaceous and argillaceous rocks, being in association with it.
12	East base of the Sierra de Tunéchá.	36 12 00 N..	108 52 00 W.	Bituminous coal, as above stated, has been found co-extensive with the country, lying between the valley of the Rio Puerco and the east base of the Sierra de Tunéchá, or through a longitudinal interval of 1¾°, but none so good as that illustrated by the specimen presented. This last crops out from the escarpment of an *arrojo* in beds from 2 to 3 feet thick, interstratified with argillaceous shale.
13	Pass Washington of the Sierra de Tunéchá.	36 3 22	108 56 00	Similar specimens found at other points of the Sierra de Tunéchá along the route.
14	Sienéguilla de Tuanita (Little John's meadows.)	36 10 36	109 12 15	Found strewed extensively over the meadows.
15	Cañon of Chelly.....	36 7 00	109 16 00	Broken from a petrified tree which protruded horizontally from the north escarpment of the cañon of Chelly, its end only being visible. Diameter of tree 1 foot. Found in drift conglomerate, this formation alternating with sandstone rock composing the superincumbent mass of rock to the top or crest of the cañon, or for a height of about 300 feet.
16	Cañon of Chelly.....	36 7 00	109 16 00	Found on a shelf of the north wall of the cañon about 300 feet below the top or crest.
17	....	35 12 00	109 11 00	Found strewed over an argillaceous soil of a reddish color.

APPENDIX D—Continued.

Schedule of miscellaneous specimens found along and near the route.

No. of specimen.	Locality.			Remarks.
	Name.	Latitude.	Longitude.	
		Deg. min. sec. Between	*Deg. min. sec.* Between	
18	Ruins in cañon of Chaco.	35 37 00 and 36 04 00 N.	107 47 00 and 108 08 00 W.	Fragment of the end of a floor beam 6 inches in diameter, also of a piece of board; each showing an end just as it was found; also specimens of the brushwood and bark which sustain upon the floor beams the superincumbent flooring of mud mortar; also a specimen of a rope found depending from the ceiling of one of the rooms.
19	Ruins of Chaco. Ruins of cañon of Chelly. Ruins of Inscription or Moro rock.			Specimens of pottery found at the ruins mentioned.
20	Navajo country			Got from a Navajo Indian; precise locality not known.
21	Vicinity of Santa Fé.			These calcareous fossils were found imbedded at foot of west slope of Santa Fé (Rocky) mountains. Dip of beds about 45° eastward, or toward the axis of the range. Contiguous to the calcareous outcrop, and on its west side, is an outcrop of micaceous slate anticlinal to the limestone formation; or, in other words, it has a dip westward of about 45°. Does not this relation show that the limestone must have been deposited *subsequent* to the elevation of the Rocky mountains, but *prior* to the upheave of the slate formation? All the specimens except the yellowish one, which was got from a neighboring locality, and doubtless from the same formation, show signs of having been slightly calcined in the kiln which is at the outcrop.

APPENDIX E.

Table of geographical positions.

Number of camp.	Place of observation, and name of locality.	Distances, measured by viameter, in miles and hundredths.		North latitude.	Longitude west from Greenwich.		Authorities.
		From camp to camp.	From Santa Fé.		In time.	In arc.	
				° ′ ″	h. m. s.	° ′ ″	
	Santa Fé	...	...	35 41 06	7 04 10	106 02 30	Bvt. Major W. H. Emory.
To 1	Sieneguilla, on Rio Santa Fé	16.02	16.02				
2	On Rio Grande, opposite Santo Domingo	14.85	30.87	35 30 56	7 55 59	106 29 45	Lieut. J. H. Simpson.
3	One-third of a mile north of Jémez	26.60	57.47	35 36 07	7 07 25	106 51 15	........do.
4	Three miles south of San Isidora	5.78	63.25				
5	On Rio de Chacoli	16.27	79.52	...	7 08 13	107 03 15	........do.
6	Cañada de Piedra de Lumbre	13.27	92.79	35 46 13			
7	Cañon de Torrejon	13.55	106.34	35 50 31	7 09 35	107 23 45	........do.
8	One mile S.E. of ruins of Pueblo Pintado	21.45	127.79	35 56 27	7 11 04	107 46 00	........do.
9	Vicinity of Mésa Tachada	14.86	142.65				
10		24.53	167.18				
11	Tunéchá valley	14.60	181.78	36 04 35	7 14 38	108 39 30	........do.
12	Tunéchá creek	17.21	199.99	36 12 59	7 15 22.68	108 50 45	........do.
13		4.32	203.31				
14	(Estimated)	10.00	213.31	36 07 42	7 15 37	108 54 15	........do.
15	Pass Washington, (estimated)	6.00	219.31	36 03 22	7 15 44	108 56 00	........do.
16	Sieneguilla Chicita, (estimated)	12.00	231.31	36 02 07	7 16 23	109 05 45	........do.
17	Sieneguilla de Juanito	13.43	244.74	36 10 36	7 16 49	109 12 15	........do.
18	Cascade creek	7.39	252.13				
19	Two miles W. of N. from mouth of the cañon of Chelly	26.45	278.58	36 09 04	7 18 50	109 42 30	........do.
20	Sierra de Laguna	20.50	299.08				
21	Cañoncito Bonito	24.83	323.91	...	7 17 02	109 15 30	........do.
22	Spring	23.02	346.93	...	7 17 14	109 18 30	........do.
23		8.29	355.22				
24		12.08	367.30	35 11 56	7 16 27	109 06 45	........do.

APPENDIX E—Continued.

Number of camp.	Place of observation, and name of locality.	Distances, measured by viameter, in miles and hundredths.		North latitude.	Longitude west from Greenwich.		Authorities.
		From camp to camp.	From Santa Fé.		In time.	In arc.	
				° ′ ″	h. m. s.	° ′ ″	
25	Two and a half miles N.E. from Zuñi.....	17.45	384 75				
26	Ojos del Pescado........................	13.71	398.46	35 05 12	7 14 46	108 41 45	Lieut. J. H. Simpson.
27	Ojo de Gallenas.........................	27.14	425.60				
28	Ojo del Gallo...........................	18.49	443.09	35 05 17	....	....	........do.
29	Two miles N.W. of Pueblo de Lagunes....	28.93	472.02	35 00 49	....	....	........do.
30	On Rio de San José......................	18.51	491.53				
31	Atrisco, opposite Albuquerque............	28.33	519.86				
32	One mile above Bernalillo................	20.70	540.56				
32	Crossing of Rio Gallestio	22.83 }	571.31				
33	Delgados *Ranchō*.......................	7.92 }					
	Santa Fé................................	15.80	581.11	35 41 06	7 04 10	106 02 30	Bvt. Major W. H. Emory,

APPENDIX F.

TABLE OF ASTRONOMICAL OBSERVATIONS.

August 14, 1849.—*Santa Fe, New Mexico.*

DETERMINATION OF TIME.

Time—P. M.			Double altitudes of sun's upper limb.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
4	51	51	51	12	20
5	2	12	47	0	0
5	3	47	46	21	50
5	5	47	45	32	30
5	7	5	45	0	50

RESULT OF CALCULATION.

Mean time.			Chronometer fast.			Longitude.		
h.	*min.*	*sec.*	*h.*	*min.*	*sec.*	*h.*	*min.*	*sec.*
4	49	56.4	0	12	12	7	4	10

Note.—Index error of sextant = — 37 sec.; and this error was found to be so nearly constant during the several observations along the route, that it may be regarded as such without materially affecting the results.

Rate of chronometer, on a comparison of observation made at Santa Fe before and after the termination of the reconnaissance, found to be a gaining one 1.17 seconds; and this is the rate assumed in the determination of the geographical positions.

Civil time is made use of in all the observations.

The latitude and longitude of Santa Fe assumed, as determined absolutely by Brevet Major Emory in 1846, and to the latter are referred chronometrically the several geographical positions.—(*See table of geographical positions on Emory's map of* 1846-'47.)

APPENDIX F—Continued.

AUGUST 17, 1849.—*Camp 2, on Rio Grande, opposite Santo Domingo.*

DETERMINATION OF TIME.

Time—P. M.			Double altitudes of sun's upper limb.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
4	6	30	69	2	10
4	8	37	68	11	10
4	9	52	67	40	50
4	12	54	66	27	10
4	14	19	65	52	50

RESULT OF CALCULATION.

Mean time.			Chronometer fast.			Longitude.		
h.	*min.*	*sec.*	*h.*	*min.*	*sec.*	*h.*	*min.*	*sec.*
3	56	22.25	0	14	4.15	7	5	59

AUGUST 18, 1849.—*Camp* 2.

DETERMINATION OF LATITUDE.

Time—A. M.			Double altitudes of Polaris.			Resulting latitude.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
4	7	40	74	2	50	35	30	56
4	11	27	74	2	40			
4	13	35	74	1	0			
4	16	13	74	1	0			

APPENDIX F—Continued.

AUGUST 19, 1849.—*Camp 3, one-third mile north of Jemez.*

DETERMINATION OF TIME.

Time—A. M.			Double altitudes of sun's upper limb.		
h.	min.	sec.	*Deg.*	min.	sec.
8	17	33	63	19	40
8	18	57	63	53	40
8	20	29	64	30	30
8	22	22	65	15	50
8	23	30	65	43	40

RESULT OF CALCULATION.

Mean time.			Chronometer fast.			Longitude.		
h.	min.	sec.	h.	min.	sec.	h.	min.	sec.
8	5	1.9	0	15	32.3	7	7	25

AUGUST 21, 1849.—*Camp 3, one-third mile north of Jemez.*

DETERMINATION OF LATITUDE.

Time—P. M.			Double altitudes of Polaris.			Resulting latitude.		
h.	min.	sec.	*Deg.*	min.	sec.	*Deg.*	min.	sec.
8	49	11	70	54	40	35	36	7
8	55	38	70	57	30			
8	59	21	71	0	30			
9	1	51	71	2	0			
9	3	50	71	3	30			
9	5	9	71	4	10			

APPENDIX F—Continued.

August 24, 1849.—*Camp 5, valley of Chacoli.*

DETERMINATION OF TIME.

Time—A. M.			Double altitudes of the sun's upper limb.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
8	22	12	63	25	10
8	23	6	63	46	0
8	24	6	64	10	30
8	25	38	64	47	40
8	26	28	65	7	30

RESULT OF CALCULATION.

Mean time.			Chronometer fast.			Longitude.		
h.	*min.*	*sec.*	*h.*	*min.*	*sec.*	*h.*	*min.*	*sec.*
8	7	51.7	0	16	26.3	7	8	13

August 25, 1849.—*Camp* 6.

DETERMINATION OF LATITUDE.

Time—A. M.			Double altitudes of Polaris.			Resulting latitude.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
12	59	3	74	8	40	35	46	13
1	1	43	74	9	0			

Note.—Intervening clouds prevented more observations being taken.

APPENDIX F—Continued.

August 25, 1849.—*Camp 7, Cañon de Torrejon.*

DETERMINATION OF TIME.

Time—P. M.			Double altitudes of sun's upper limb.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
4	54	35	46	45	21
4	56	13	46	38	10
4	57	18	46	11	20
4	58	9	45	50	40

RESULT OF CALCULATION.

Mean time.			Chronometer fast.			Longitude.		
h.	*min.*	*sec.*	*h.*	*min.*	*sec.*	*h.*	*min.*	*sec.*
4	38	43.45	0	17	50.3	7	9	35

August 25.—*Camp 7.*

DETERMINATION OF LATITUDE.

Time—P. M.			Double altitudes of Polaris.			Resulting latitude.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
8	42	0	71	26	10	35	50	31
8	47	47	71	31	20			
8	51	37	71	33	10			
8	53	58	71	36	10			
8	55	35	71	36	50			

APPENDIX F—Continued.

AUGUST 26, 1849.—*Camp 8, one mile south of ruins of Pueblo Pintado.*

DETERMINATION OF TIME.

Time—P. M.			Double altitudes of Arcturus (in the west.)		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
8	30	42	61	32	50
8	32	35	60	48	20
8	34	3	60	12	50
8	37	41	58	44	10

RESULT OF CALCULATION.

Mean time.			Chronometer fast.			Longitude.		
h.	*min.*	*sec.*	*h.*	*min.*	*sec.*	*h.*	*min.*	*sec.*
8	14	25.7	0	19	20.18	7	11	4

AUGUST 26, 1849.—*Camp* 8.

DETERMINATION OF LATITUDE.

Time—P. M.			Double altitudes of Polaris.			Resulting latitude.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
8	46	21	71	43	50	35	56	27
8	48	0	71	45	30			
8	50	21	71	45	40			
8	51	34	71	47	20			
8	53	19	71	48	30			
8	55	38	71	51	40			

APPENDIX F—Continued.

August 29, 1849.—*Camp* 11, *Tunécha valley*.

DETERMINATION OF LATITUDE.

Time—P. M.			Double altitudes of Polaris.			Resulting latitude.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
8	18	43	71	43	50	36	4	35
8	20	47	71	45	30			
8	24	44	71	48	20			
8	26	37	71	51	40			
8	28	31	71	51	30			

August 29, 1849.—*Camp* 11.

DETERMINATION OF TIME.

Time—P. M.			Double altitudes of Arcturus (in the west.)		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
8	32	6	57	43	10
8	34	42	56	40	10
8	37	58	55	18	40
8	41	56	53	42	50
8	45	34	52	16	10
8	47	41	51	23	40

RESULT OF CALCULATION.

Mean time.			Chronometer fast.			Longitude.		
h.	*min.*	*sec.*	*h.*	*min.*	*sec.*	*h.*	*min.*	*sec.*
8	17	1.70	0	22	57.80	7	14	38

APPENDIX F—Continued.

August 30, 1849.—*Camp* 12, *Tunéchá creek.*

DETERMINATION OF TIME.

Time—P. M.			Double altitudes of sun's upper limb.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
4	39	0	53	11	50
4	40	2	52	47	10
4	41	16	52	18	10
4	42	4	51	59	0
4	43	14	51	30	10
4	44	6	51	10	10

RESULT OF CALCULATION.

Mean time.			Chronometer fast.			Longitude.		
h.	*min.*	*sec.*	*h.*	*min.*	*sec.*	*h.*	*min.*	*sec.*
4	17	53.93	0	23	43.40	7	15	22.68

August 30, 1849.—*Camp* 12.

DETERMINATION OF LATITUDE.

Time—P. M.			Double altitudes of Polaris.			Resulting latitude.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
8	25	40	72	8	20	36	12	59
8	27	29	72	10	30			
8	30	6	72	12	40			
8	35	40	72	19	0			
8	37	46	72	19	10			
8	40	8	72	20	0			

APPENDIX F—Continued.

SEPTEMBER 1, 1849.—*Camp* 14.

DETERMINATION OF TIME.

Time—P. M.			Double altitudes of sun's upper limb.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
4	26	45	57	6	10
4	27	45	56	43	40
4	28	37	56	21	40
4	29	24	56	2	40
4	30	13	55	43	40
4	31	16	55	19	10
4	33	43	54	20	10

RESULT OF CALCULATION.

Mean time.			Chronometer fast.			Longitude.		
h.	*min.*	*sec.*	*h.*	*min.*	*sec.*	*h.*	*min.*	*sec.*
4	5	39.89	0	24	0.54	1	15	37

SEPTEMBER 1, 1849.—*Camp* 14.

DETERMINATION OF LATITUDE.

Time—P. M.			Double altitudes of Polaris.			Resulting latitude.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
8	50	47	71	43	50	36	7	42
8	3	8	71	46	50			
8	8	40	71	52	0			
8	11	39	71	52	30			
8	13	28	71	55	30			
8	14	48	71	55	10			

APPENDIX F—Continued.

September 2, 1849.—*Camp* 15, *Pass Washington, Sierra de Tunéchá.*

DETERMINATION OF TIME.

Time—P. M.			Double altitudes of sun's upper limb.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
4	44	53	49	23	40
4	46	21	48	48	40
4	47	51	48	12	30
4	48	56	47	46	40

RESULT OF CALCULATION.

Mean time.			Chronometer fast.			Longitude.		
h.	*min.*	*sec.*	*h.*	*min.*	*sec.*	*h.*	*min.*	*sec.*
4	22	52.25	0	24	8	7	15	44

September 2, 1849.—*Camp* 15.

DETERMINATION OF LATITUDE.

Time—P. M.			Double altitudes of Polaris.			Resulting latitude.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
8	11	53	71	47	40	36	3	22
8	13	48	71	49	30			
8	18	37	71	52	40			
8	20	9	71	54	30			
8	24	20	71	58	20			
8	28	6	72	1	0			

APPENDIX F—Continued.

SEPTEMBER 3, 1849.—*Camp* 16, *Rio Negro.*

DETERMINATION OF TIME.

Time—P. M.			Double altitude of sun's upper limb.		
h.	min.	sec.	Deg.	min.	sec.
4	36	10	52	34	50
4	38	28	51	39	40
4	40	.1	51	2	50
4	41	30	50	27	20
4	42	58	49	51	40

RESULT OF CALCULATION.

Mean time.			Chronometer fast.			Longitude.		
h.	min.	sec.	h.	min.	sec.	h.	min.	sec.
4	15	26	0	24	47	7	16	23

SEPTEMBER 3.—*Camp* 16.

DETERMINATION OF LATITUDE.

Time—P. M.			Double altitude of Polaris.			Resulting latitude.		
h.	min.	sec.	Deg.	min.	sec.	Deg.	min.	sec.
8	12	15	71	47	50	36	2	7
8	14	2	71	50	50			
8	15	26	71	50	30			
8	18	20	71	52	50			
8	20	26	71	55	40			
8	22	21	71	55	50			

APPENDIX F—Continued.

SEPTEMBER 4, 1849.—*Camp* 17, *Sieneguilla de Juanita.*

DETERMINATION OF TIME.

Time—P. M.			Double altitudes of sun's upper limb.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
4	35	47	52	18	30
4	37	21	51	41	10
4	38	43	51	8	40
4	39	55	50	40	30
4	40	58	50	15	0
4	41	48	49	55	0

RESULT OF CALCULATION.

Mean time.			Chronometer fast.			Longitude.		
h.	*min.*	*sec.*	*h.*	*min.*	*sec.*	*h.*	*min.*	*sec.*
4	13	48.53	0	25	16.80	7	16	49

SEPTEMBER 4, 1849.—*Camp* 17.

DETERMINATION OF LATITUDE.

Time—P. M.			Double altitudes of Polaris.			Resulting latitude.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
8	4	33	72	1	30	36	10	36
8	6	12	72	3	30			
8	9	48	72	5	40			
8	12	31	72	8	10			
6	15	20	72	10	30			
	18	25	72	13	20			

APPPENDIX F—Continued.

SEPTEMBER 7, 1849.—*Camp* 19, *one-and-a-half mile northwest of mouth of cañon of Chelly.*

DETERMINATION OF TIME.

Time—P. M.			Double altitudes of sun's upper limb.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
8	45	6	63	30	50
8	49	52	65	20	10
8	50	54	65	44	10
8	52	10	66	13	10
8	53	27	66	42	30
8	54	53	67	15	20

RESULT OF CALCULATION.

Mean time.			Chronometer fast.			Longitude.		
h.	*min.*	*sec.*	*h*	*min.*	*sec.*	*h.*	*min.*	*sec.*
8	23	43.66	0	27	20	7	18	50

SEPTEMBER 7, 1849.—*Camp* 19

DETERMINATION OF LATITUDE.

Time—P. M.			Double altitudes of Polaris.			Resulting latitude.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
8	12	34	72	12	50	36	9	
8	14	18	72	14	10			
8	16	6	72	16	20			
8	18	31	72	18	0			
8	20	17	72	18	50			
8	21	55	72	20	40			

APPENDIX F—Continued.

SEPTEMBER 11, 1849.—*Camp* 21, *Cañoncito Bonito.*

DETERMINATION OF TIME.

Time—P. M.			Double altitudes of Alpha Coronæ Borealis.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
8	47	0	71	0	30
8	48	40	70	19	0
8	51	53	69	2	0
8	53	38	68	29	50
8	55	35	67	35	10
8	57	55	66	37	0

RESULT OF CALCULATION.

Mean time.			Chronometer fast.			Longitude.		
h.	*min.*	*sec.*	*h.*	*min.*	*sec.*	*h.*	*min.*	*sec.*
8	26	49.83	0	25	37	7	17	2

SEPTEMBER 13, 1849.—*Camp* 22.

DETERMINATION OF TIME.

Time—A. M.			Double altitudes of sun's upper limb.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
8	16	31	51	18	40
8	18	21	52	2	50
8	19	16	52	23	20
8	20	7	52	43	0
8	21	10	53	8	20
8	26	6	54	40	30

RESULT OF CALCULATION.

Mean time.			Chronometer fast.			Longitude.		
h.	*min.*	*sec.*	*h.*	*min.*	*sec.*	*h.*	*min.*	*sec.*
7	54	14.49	0	25	50.68	7	17	14

APPENDIX F—Continued.

SEPTEMBER 14, 1849.—*Camp* 24.

DETERMINATION OF TIME.

Time—P. M.			Double altitudes of sun's upper limb.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
3	49	4	64	57	0
3	50	7	64	32	50
3	50	55	64	14	30
3	51	46	63	54	50
3	52	45	63	32	10
3	53	30	63	15	10

RESULT OF CALCULATION.

Mean time.			Chronometer fast.			Longitude.		
h.	*min.*	*sec.*	*h.*	*min.*	*sec.*	*h.*	*min.*	*sec.*
3	26	12.87	0	25	8 30	7	16	27

SEPTEMBER 14, 1849.—*Camp* 24.

DETERMINATION OF LATITUDE.

Time—P. M.			Double altitudes of Polaris.			Resulting latitude.		
h.	*min.*	*sec.*	*h.*	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
8	6	43	70	37	40	35	11	56
8	8	23	70	38	30			
8	9	43	70	40	20			
8	11	5	70	41	50			
8	13	10	70	43	50			
8	14	51	70	44	20			

APPENDIX F—Continued.

SEPTEMBER 16, 1849.—*Camp 26, Ojo Pescado.*

DETERMINATION OF LONGITUDE.

Time—P. M.			Double altitudes of sun's upper limb.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
3	44	10	65	0	0
3	45	13	64	36	10
3	46	11	64	14	10
3	46	57	63	56	30
3	47	43	63	39	20
3	48	33	63	20	30

RESULT OF CALCULATION.

Mean time.			Chronometer fast.			Longitude.		
h.	*min.*	*sec.*	*h.*	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
3	23	0.54	0	23	27.29	7	14	46

SEPTEMBER 16, 1849.—*Camp* 26.

DETERMINATION OF LATITUDE.

Time—P. M.			Double altitudes of Polaris.			Resulting latitude.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
8	34	34	70	52	40	35	5	12
8	36	33	70	55	10			
8	38	10	70	55	30			
8	39	43	70	55	40			
8	40	46	70	56	40			
8	43	13	70	59	50			

APPENDIX F—Continued.

SEPTEMBER 18, 1849.—*Camp 28, Ojo del Gallo.*

DETERMINATION OF LATITUDE.

Time—P. M.			Double altitudes of Polaris.			Resulting latitude.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
7	34	10	70	15	20	35	5	17
7	38	32	70	17	50			
7	39	43	70	19	20			
7	41	35	70	21	50			
7	42	55	70	21	40			
7	44	23	70	22	40			

SEPTEMBER 19, 1849.—*Camp 29, 2 miles northwest of Pueblo of Laguna.*

DETERMINATION OF LATITUDE.

Time—P. M.			Double altitudes of Polaris.			Resulting latitude.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*	*Deg.*	*min.*	*sec.*
9	36	43	71	40	30			
9	48	8	71	50	10	35	0	49
9	49	13	71	49	20			
9	52	46	71	50	50			
9	54	21	71	55	20			
9	56	6	71	55	40			

APPENDIX F—Continued.

SEPTEMBER 27, 1849.—*Santa Fe.*

DETERMINATION OF TIME.

Time—A. M.			Equal altitudes of sun's upper limb.			Time—P. M.		
h.	*min.*	*sec.*	*Deg.*	*min.*	*sec.*	*h.*	*min.*	*sec.*
8	59	28	66	38	40	3	7	58
9	0	34	66	59	30	3	6	51
9	1	30	67	18	20	3	5	58
9	2	25	67	37	40	3	5	3
9	3	48	68	6	10	3	3	40

RESULT OF CALCULATION.

Mean time of apparent moon.			Chronometer fast.			Longitude.		
h.	*min.*	*sec.*	*h.*	*min.*	*sec.*	*h.*	*min.*	*sec.*
11	50	52.12	0	13	3.8	7	4	10

REPORT OF CAPTAIN R. B. MARCY.

FORT SMITH, ARKANSAS, *November* 20, 1849.

SIR: On the second day of April, 1849, I had the honor to receive the following orders from the headquarters of the 7th military department:

HEADQUARTERS SEVENTH MILITARY DEPARTMENT,
[ORDERS No. 5.] *Fort Smith, April* 2, 1849.

1. In compliance with "special orders" No. 6, dated Adjutant General's office, January 23, 1849, an escort consisting of one subaltern and thirty men of the 1st regiment of dragoons, and one captain, two subalterns, and fifty men of the 5th regiment of infantry, will leave Fort Smith, Arkansas, on the 5th instant, for Santa Fe, New Mexico, for the purpose of affording protection to our citizens emigrating to our newly acquired territories.

2. The quartermaster's department will, upon the requisition of the commanding officer, furnish ample transportation, funds, and such other facilities as may be necessary for the expedition. The commissary department will furnish the necessary funds and subsistence for five months.

3. The commanding officer of the escort will employ a citizen physician to accompany the troops to Santa Fe and back to Fort Smith; and the medical officer at this post will provide a good supply of medicines, hospital stores, &c., for the command.

Captain R. B. Marcy, the commanding officer, will receive a letter of instructions for his guidance on the march, before his departure from this post.

By command of Brigadier General Arbuckle.

F. F. FLINT,
Acting Assistant Adujant General.

Captain R. B. MARCY,
Fifth Regiment Infantry, commanding escort.

On the 4th day of April, 1849, the following letter of instructions was received by me:

HEADQUARTERS SEVENTH MILITARY DEPARTMENT,
Fort Smith, April 4, 1849.

CAPTAIN: The commanding general directs that you proceed with your command from this place, in accordance with department orders No. 5, along the valley of the main Canadian, wholly on the south side of the river, by the most direct practicable route, to your destination, Santa Fe, New Mexico. It is expected you will move forward as rapidly as possible, making such improvements, &c., in the road, as you may deem necessary, until you arrive near to Edwards', where you will secure an ample supply of corn and beeves, and, after remaining there a day or two, you will proceed slowly to the vicinity of Chouteau's, where (if not already overtaken by the Fort Smith company and others who intend starting about the 10th instant) you will await their arrival.

The principal objects of this expedition are: to ascertain and establish the best route from this point to New Mexico and California; to extend to such of our citizens as design leaving here in a few days and traversing your route such facilities as circumstances may require, and it is in your power to give, to insure them a safe and unmolested passage across the prairies; and to conciliate as far as possible the different tribes of Indians who inhabit the region of country through which you will pass.

With this view, therefore, you will cause an accurate examination of the country, survey, and measurement of the road travelled to be made, keeping a correct journal of each day's march; noting the distances between good camping places; whether wood and water are to be met with in abundance; and, in short, embracing all subjects worthy of observation, or that may be of interest or service to the future traveller. On reaching the "Grand Prairie," you will most undoubtedly meet with the Comanches; should you do so, you will hold a "talk" with them, and present the principal chiefs with a few pipes and some tobacco, informing them that the present is intended to remind them of the treaty they made with the whites, through General Arbuckle and others, some years ago, at "Camp Holmes," or "Chouteau's Trading-house," near the Canadian, in which they stipulated that our citizens should be permitted to pass through their country in safety and without molestation; and that, as a great number of our people will probably travel over the road which is being established to New Mexico by the President of the United States, it is hoped they will remember their promises, &c. You will also endeavor to create and maintain a good understanding with such other tribes as you may chance to meet with, by presents of pipes and tobacco, kind and friendly intercourse, and by preventing the occurrence of any such acts on the part of your men or others as may tend to diminish their confidence in our citizens, alienate their friendly feelings, or excite in them a spirit of hostility and revenge.

If you should find among the Comanches an intelligent Indian who is acquainted with the country between the "Plains" and the Del Norte, and who knows that there is a good pass through the mountains practicable for wagons, from some point on the Del Norte about one hundred and eighty or two hundred miles below Santa Fe, you are authorized to employ him to accompany you as a guide. And in case you should be fully convinced of the correctness of his statements from information received on your arrival at Santa Fe, and that you can march from that point on the Del Norte to the "Plains," or to your outward trail intersecting it, perhaps somewhere near the mouth of Dry river, in *perfect safety*, and without subjecting your command to the necessity of encountering severe trials or hardships, you will return by that route; but if otherwise, you will furnish the commanding officer at Santa Fe with a copy of your field notes west of Dry river, and, after having sufficiently recruited your animals and refreshed your men, you will return with your command to Fort Smith with as little delay as convenience permits.

You are, doubtless, well aware of the importance and necessity of the strictest vigilance and care, at all times and under all circumstances, upon an expedition of this nature; and much must, from the necessity of the case, be left to the discretion of the commanding officer, who, as circumstances arise, should shape his course and make his arrangements accordingly, having a view to the main objects to be attained.

It is understood that an engineer officer will arrive in the course of a few days to accompany your command. If he should join you on the march, you will, of course, afford him every facility necessary to enable him to properly discharge his duties. You will please avail yourself of favorable opportunities to report your progress, &c.

I am, sir, very respectfully, your obedient servant,

F. F. FLINT,
Assistant Acting Adjutant General.

Captain R. B. Marcy,
Fifth Regiment Infantry, commanding Santa Fe Expedition,
Fort Smith, Arkansas.

In obedience to the foregoing orders, I employed Dr. Julian Rogers, of Wilmington, Delaware, to act as physician to the escort, and made requisitions upon the quartermaster's and subsistence departments for such supplies as I thought would be necessary for an expedition of this kind, all of which were furnished promptly. I would remark, however, that many of the mules furnished were those which had been driven from Mexico at the close of the war, and, being poor, were not such as I should have selected. In consequence of this, we were longer upon the road than we otherwise should have been, as we were obliged to make short marches and stop frequently to recruit them.

The detachment, as organized at Fort Smith, consisted of Lieutenant J. Buford, and twenty-six non-commissioned officers and privates of F company 1st dragoons, and Lieutenants M. P. Harrison and J. Updegraff, with fifty non-commissioned officers and privates of the 5th infantry.

Twenty men of this detachment, under the command of Lieutenant J. Updegraff, as you are aware, had been previously sent forward upon the route to assist Captain Dent, 5th infantry, in making an examination of the country upon the south side of the Canadian river as far as near Edwards' Trading-house, and to open a road for wagons through the heavily-timbered country between Fort Smith and that point.

The road having been surveyed and measured by Captain Dent as far as the point where I overtook him, and he having made a report of the same, I shall pass briefly over this portion of our route, remarking that my report of this part of the road, so far as relates to courses and distances, is based entirely upon the notes furnished by that officer, and that I have connected his survey with my own upon the accompanying map in such a manner as to give all the information which is necessary for travellers over the road.

The character of the country upon our route for the first hundred and fifty miles from Fort Smith is of such a nature that it becomes extremely soft and boggy in a wet season, and is then almost impassable for loaded wagons, except in the beaten roads. It is generally a soft alluvial soil upon a substratum of quicksand, covered with a heavy growth of timber, mostly post oak; and before the road is packed, it will often be heavy.

Previous to and after my departure from Fort Smith, there had been very frequent rains throughout the whole country over which we passed, and the earth had become perfectly saturated with water; indeed, it was often remarked that there had not been so wet a season for many years. For this reason, our progress in making a new road upon the first part of our route and passing over it with loaded wagons was necessarily very slow, and caused some of the emigrants to think that a better route could have been selected.

This part of the road, however, is much more directly on our course than the old road to Little river, and will, in addition to being some thirty miles shorter, be as good, when it has been travelled sufficiently to beat down the earth and pack it. Another advantage which this road possseses over the old road is in the fact, that upon the latter there are large streams to cross, which often detain the traveller for several days; whereas, upon the new road there are no large streams, as it continues altogether upon the south side of the Canadian.

Upon the map which accompanies this report I have noted our camps, and in a table laid down the distances between each, and have also noted the best places for encamping: these I have intended as daily stages for travellers with loaded wagons, and they can easily be made with mule or ox teams. Where there is no wood (and there are but few such places) will be seen by a reference to the table: at such places, a supply for cooking should be carried forward from the previous camp. Generally there is an abundance of wood, water, and grass at all the camping places upon the road.

For the first hundred and fifty miles from Fort Smith the road passes over a gently undulating country, mostly timbered, but interspersed with small prairies affording excellent grass, and the numerous small creeks and rivulets give the traveller an opportunity of encamping at almost any place he may desire.

Beyond this we struck the plains, where wood and water are not so abundant, yet there is no place upon the whole road where a very long drive has to be made to get water.

After reaching the prairie, west of the upper Cross Timbers, the ground is then as smooth and firm as the macadamized road almost the entire distance to Santa Fe.

From Fort Smith to Santa Fe, the road was measured with a chain and viameter; the measurement by the chain was a little less than that of the viameter, as the latter, being attached to a wheel, measured all the slight inequalities of ground over which the wheel passed, whereas the chain, being held horizontal, was more accurate; I have therefore given the distances as determined therewith.

In returning from the "Rio del Norte," by the southern route, I only used the viameter, and made a deduction of the same *per centage* in the distance determined as was found between the two measurements in going out.

The bearing, or course of our road, was taken with a compass every mile, and a mean of the observations taken during each day has been assumed as the course for that day's march.

The variation of the needle was determined by Lieutenant Simpson, (the topographical officer who accompanied the escort,) at four different points on our outward route; and by myself at four points, about equal distances from each other, between the Rio del Norte and Fort Smith, in returning. Between these points a mean of the observation, on each side, has been taken as the correct magnetic variation for that portion of the road.

With these data, and personal observations, together with information obtained from guides and others who could be relied upon, I have plotted my map. As I have thought that a better idea of the country over which we passed could be had by making this report in the form of a journal, I have accordingly adopted that plan, and shall commence it at the point where I overtook Captain Dent, after making a few remarks upon the country we passed over before reaching him.

Our "train," consisting of eighteen wagons, one six-pounder iron gun and a travelling forge, each drawn by six mules, crossed the Poteau river at Fort Smith, on the evening of the 4th of April, 1849. On the morning of the 5th we commenced our march, keeping the old road through the Poteau bottom, to the Choctaw agency. Two miles from here there are three roads; the left is the old road to Fort Washita, the right leads to Edwards' trading-house, and the middle one is our road: keeping this, our course is 20° south of west, passing over a smooth and gently rolling country of timber and small prairies until we reach the "Sansbois," (forty-seven miles from Fort Smith.)

This stream is an affluent of the Canadian, and can be forded at almost any stage of water. It is sixty feet wide, two and a half feet deep at a medium stage, and not rapid.

From the Sans Bois to Cooper's creek the course is 20° 30′ south of west.

Our road lay between two ranges of low mountains, in a beautiful prairie valley, and ascended very gradually until we reached the summit of the ridge dividing the waters of the Sansbois from those of the south fork of the Canadian or Gaines's creek.

From Cooper's creek to where the road touches a bend of the Sans Bois, sixty-one miles from Fort Smith, our course was west; from that point to the summit of the dividing ridge, 30° south of west, and from thence to the south fork of the Canadian, 20° south of west.

The south fork of the Canadian is 76½ miles from Fort Smith; is one hundred feet wide, and twelve feet in depth at the ferry. There is a ford about three hundred yards above the ferry, where the stream can be crossed when the water is not high.

From here our course was 18° south of west, over a rolling prairie, for ten miles, until we struck the bottom of Coal creek, 88 miles from Fort Smith.

The creek is thirty yards wide, has a gravelly bed, with two feet of water in the channel. Although it is sometimes above fording for a few days at a time, yet it can generally be crossed without difficulty. We worked upon the banks and made a good passage for wagons.

Bituminous coal is found upon this creek, and used by the blacksmiths of the country, who pronounce it of an excellent quality.

From here to the Shawnee trail, our road runs 15° south of west; from thence to the second ford of Coal creek, 30° 30′ south of west; thence to Little Cedar mountain, 100 miles from Fort Smith, the course is 22° south of west; here the road runs 18° north of west to Stony Point, 5° north of west to the Shawnee village, and 26° south of west to Shawneetown, 125 miles from Fort Smith.

At this place the road forks; the right going to Edwards' trading house, (eight miles off,) and the left is our trail. Should travellers desire to purchase supplies, this is the last point where they can be obtained, as the road here leaves the settlements. Horses, cattle, corn, and many articles of merchandise, can be had at Edwards' settlement, on the north side of the Canadian.

While here I engaged a Delaware Indian, named "Black Beaver," to accompany us as guide and interpreter; and he proved to be a most useful man. He has travelled a great deal among many of the western and northern tribes of Indians, is well acquainted with their character and habits, and converses fluently with the Comanches and most of the other prairie tribes.

He has spent five years in Oregon and California—two years among the Crow and Black Feet Indians; has trapped beaver in the Gila, the Columbia, the Rio Grande, and the Pecos; has crossed the Rocky mountains at many different points, and indeed is one of those men that are seldom met with except in the mountains.

While encamped opposite the mouth of Little river, we were visited by some of the Shawnees who live in the vicinity, and I discovered, much to my surprise, that their language was very similar to that of the Chippewas; indeed, many of their words were the same: for instance, they both call fire "*scota*," water "*nepish*," tobacco "*sama*," bear "*mucqua*," and many others are the same. They live principally by agriculture, and have some good farms; they raise corn, wheat, cattle, hogs, and horses, and appear to have an abundance of everything.

On the 1st of May we left our camp, opposite Edwards', taking a course almost south, gradually turning to the west to pass around mountains which border the Canadian, until we reached the Delaware mountain, 146 miles from Fort Smith.

The country is here very beautiful, being a rolling prairie, with numerous small islands or groves of timber, and many streams of pure spring water, skirted with trees of different kinds.

The soil is of a good quality, resting upon a basis of limestone, and in every respect well adapted to cultivation.

From the Delaware mountain, our road passed by a gradual and easy ascent up the ridge dividing the "Boggy" (a tributary of Red river) from the waters of the Canadian. Directly where we passed, there is a high, round mound, and upon the top a pile of rocks, which can be seen for a long distance around, and is a good landmark for the traveller. One mile from this mound we reached a beautifully clear, rapid stream, abounding with fish, and here we found Captain Dent encamped. After he had furnished me with a copy of his field-notes, he turned back for Fort Smith, and I proceeded on, taking Lieutenant Updegraff and the detachment under his command. Seven miles from where we overtook Captain Dent, we crossed another and much larger stream, thirty yards wide and one foot deep, with a very rapid current: this is called by the Indians "To-paf-kees" creek. There is walnut, oak, ash, and other kinds of hard timber, growing upon the creek, but no grass; about a mile from here, however, at the border of the prairie, we found good grass, and encamped on the night of the 3d of May.

May 4.—We did not move to-day, as it has rained most violently all day: the earth has become very soft, and the creeks are full.

May 5.—We made an early start this morning and travelled over a beautiful prairie, crossing two small streams (affluents of the Washita) which are called, after they unite, "Mustang creek," from the fact that wild horses are often found upon it.

As Beaver assured me that we should find no more hickory timber after passing this stream, I procured an extra supply of poles, axles, and hounds for our wagons, to serve us across the "plains," and would advise all persons passing over the road to do the same, as, after passing here, there is no suitable timber for such purposes.

I saw to-day, for the first time, the "mezquite" grass, and it is probably this which attracts the wild horses, as they are very fond of and soon fatten upon it.

The hills we passed to-day are of a red sandstone formation, highly ferruginous, and in a state of decomposition. Limestone is also found in places. The country, as we advance, is becoming more destitute of timber.

May 6.—It rained during the whole of last night, and has made our road so heavy that I have concluded to "lie by" until to-morrow. This evening we have another thunder storm, accompanied by the most intensely vivid lightning I have ever seen. The whole artillery of heaven appears to be playing; and, as the sound reverberates in the distance over the vast expanse of prairie, the effect is indeed most awfully sublime. Upon such an occasion one realizes truly the wonderful power and majesty of the Deity, and the total insignificance of man. While I am writing the rain pours down in torrents, and the wind comes whistling over the distant plain with terrific violence. The flies of our tents, soaked with the driving storm, and drawn to their utmost tension by the shrinking of the cords, strike the tents with such force as to produce reports like pistols. The whole surface of the earth is deluged with water.

May 7.—We were so fortunate as to keep our tents in an upright position last night, and the storm ceased after about two hours' duration. Making a start this morning, by hard work on our men and animals we made five miles. The country has been rolling prairie, with several small patches of oak and elm timber. The soil continues highly charged with iron and of a deep red color; it is, however, becoming thin and poor as we advance. At our camp of this evening we can see the valleys of both the Washita and the Canadian, and we are now upon the ridge dividing the waters of these two rivers. As we are now coming into the vicinity of the Comanche "range," I have given orders for cartridges to be issued to the command, and shall take up our line of march from this time in the following order: the dragoons in advance about one mile from the train, the main body of the escort directly in front of the train, the cannon in the centre, and the guard in the rear.

May 8.—We marched eleven miles to-day, and struck the dividing ridge after crossing a stream some five miles from our camp of last night. We found many small branches rising near the summit of the ridge, running off into the Washita and Canadian; they are skirted with trees sufficient for fuel, and in many of them there is water near the road; they thus afford good camping places. Our road approached near and in view of the Canadian; a short distance of our camp of to-night we could discover much more timber upon the opposite bank. The grass continues good, but the soil is of a poor quality.

May 9.—We resumed our march this morning, keeping the high prairie Divide for seventeen miles, where the ridges turns to the left, nearly opposite "Old Fort Holmes." As the Fort Smith company have not yet reached us, we shall await their arrival here, as ordered. The cause of their delay has been, that they crossed the Canadian at Edwards', and have found the road much worse than on this side. The country we have passed over to-day has been entirely prairie, with the exception of a few scattering trees upon the borders of the branches heading near the crest of the "Divide." As we are now near the eastern borders of the "Lower Cross Timbers," I shall start out in the morning and endeavor to find a good road to pass our wagons through.

May 10.—Taking Beaver with me, I started out this morning to examine the country ahead. We found that the Divide turned south into the Cross Timbers, was very circuitous in its course, and extended some fifteen miles before it came out upon the prairie west of the "Timbers." It would have required several days' labor to open a road upon the "Divide," and I determined to make a further examination. On our return to camp, we followed down a creek called "Chouteau's creek," which heads near where we turned, and runs almost a due east course between the "Cross Timbers" and the Canadian; we found a smooth prairie along the bank of the creek, and encamped at sundown. As we had taken nothing from camp with us except some hard bread and tea, I began to be fearful towards night that our supper would be but a sorry one, and intimated as much to the Indian, telling him "that a good hunter should certainly kill game enough for two men's supper;" soon after this he discovered a turkey upon the prairie, and, putting spurs to his horse, started after him at full speed. I thought this a novel method of hunting wild turkeys, and looked on the chase with a good deal of interest, particularly as I knew that the quality of our supper depended upon the result. The turkey was about half a mile ahead at the start, and made good running for a short time, but soon found it necessary to resort to flight. The hunter followed on till the turkey alighted and ran into a timbered ravine; he still followed out of sight with his horse, but soon appeared again with a stick driving the exhausted bird before him. I expressed much surprise at the facility with which he run down and caught the turkey; but he informed me that they seldom ever fly more than twice before they become exhausted, and are then easily taken.

May 11.—This morning we continued down the creek upon a narrow strip of prairie lying between the "Cross Timbers" and the creek, which led us back to camp in a direct course.

May 12.—As the Fort Smith company have not arrived, we are burning a small coal-pit, sufficient to serve us across the "plains." This evening I received a note from Captain Dillard, of the Fort Smith company, informing me that he will join us in three days. He has had great difficulty in passing over the road upon the north side of the Canadian, and the company express much regret that they were not governed by his wishes to follow upon our trail; they promise to do so in future.

May 13.—We remained in camp to-day, waiting Captain Dillard's arrival, but shall move forward to-morrow about five miles, for the purpose of bridging two small streams which intersect our route and run into Chouteau's creek.

May 14.—Starting this morning, we marched to the first creek, bridged it, and encamped upon the second; they are spring brooks rising in the "Timbers," and have good water in them at all seasons of the year. Upon the banks of Chouteau's creek there is cottonwood, elm, hackberry, and a species of oak bearing an acorn about the size of a black walnut, with a very thick bur, and a fringe at the top of it encircling the nut; this is called by the Indians "overcup." This evening there suddenly arose one of the most terrific storms I ever witnessed—it was a perfect tornado; the first blast laid nearly every tent in the camp flat upon the ground, and sent beds, trunks, and tables whirling and tumbling in every direction. Our camp presented for a few minutes a most perfect scene of confusion. As I looked out from under my tent, (which had fallen upon me and held me fast,) I saw, by the incessant flashes of lightning, officers and men running in all directions through the rain—some trying to find shelter, and others following up a hat, blanket, or tent which the gale had seized upon and was carrying off upon the prairie. Nothing could resist the violence of the storm; it continued about an hour, when the wind abated, and we went to work to put up our tents again. Everything is soaked, and we shall remain to-morrow to dry, when we hope to be joined by the Fort Smith company.

May 15.—This has been a day of general drying throughout camp, and we are now ready to move forward again, as soon as we learn that Captain Dillard is near us. Dr. Rogers was so unfortunate as to have all his botanical specimens ruined by the storm last night; this is to be much regretted, as he had a great variety of plants and flowers which he will not meet with again, being near the Grand Prairie where the character of vegetation is entirely different from what we have passed.

May 16.—Learning that the Fort Smith company are near us, upon the other side of the creek, I started this morning and moved a few miles up the valley.

The grass in the creek bottom is fine and the soil good.

May 17.—This morning we continued up the creek for about a mile, then turned to the left, and struck the Divide in the "Cross Timbers;" after marching six miles, we reached the large prairie between the two "Cross Timbers" and encamped upon the head of Chouteau's creek, where we found good grass, fine clear spring water, and oak wood.

Through the "Cross Timbers" the wood is black-jack, post oak, overcup, and hackberry. The soil is gravelly sand, and the rocks a dark, hard sandstone. I found iron ore upon Chouteau's creek, and the soil continues to be ferruginous. We have seen some deer to-day; but game is not abundant.

May 18.—Continuing upon the high and dry dividing ridge, we made eleven miles; the soil is of a good quality, but there is no timber and but little water; we, however, found wood, water, and grass sufficient for camping purposes. We have seen occasionally detached pieces of gypsum to-day, and some limestone, but the rocks have generally been a soft, coarse standstone. Our road approached within two miles of the Canadian at one point of our march to-day, and directly at this place we were opposite the mouth of "Spring creek," a very beautiful stream of pure spring water; has good grass upon it, and wood sufficient for camping purposes. The Fort Smith company joined us yesterday, and we shall now move on more rapidly.

May 20.—This being Sunday, and a very rainy day, we remained in camp; the rain commenced with one of those thunder showers which are so frequent upon the prairies, and, as usual, it was accompanied by a perfect tempest of wind. We are now near the "Upper Cross Timbers," and I find upon examination that we cannot follow the "Divide" through, as it becomes very rough and broken immediately upon entering the timber. I shall, therefore, leave the "Divide," cross Spring creek, and take the high prairie between that stream and the Canadian. In this way I shall be enabled to pass on the prairie entirely around the Upper Cross Timbers.

I met with the wild squash to-day; it has much the appearance of the cultivated varieties, except that the leaves are of a light blue color; they are now in blossom.

May 21.—Our road to-day continued on the "Divide" for three miles, when, coming near the Timbers, we turned to the right and took the prairie valley up "Spring creek," skirting the lower edge of the "Cross Timbers;" here we found a fine road, and moved along with great ease to our animals. We encamped upon one of the numerous spring branches which flow into Spring creek, and found an abundance of good wood, water, and grass.

May 22.—This morning we continued up the south side of the creek for three miles further, where we turned to the right and crossed to the dividing ridge lying between the creek and the Canadian; at the point where the road strikes the crest of the ridge we found ourselves only one mile from the river, and continued that distance from it until we reached the head of Spring creek, where we encamped, making our day's march sixteen miles. The valley of Spring creek is beautifully situated for farms; slopes gently to the south, and is a mile in width, abundantly watered, arable soil, and timbered with black walnut, elm, hackberry, and cottonwood. It is in the immediate vicinity of the Upper Cross Timbers, where post-oak timber is abundant, affording a good material for building and fencing purposes. It is also directly opposite the head of the Little Washita river, where there is said to be hickory and sugar-maple timber, within a distance of ten miles from this place.

These advantages, in connexion with the fact that there are no other streams for three hundred miles west of here upon our route, which have good soil, or any other building timber except cottonwood, (and that in very small quantities,) render this stream a suitable point for the establishment of a military station, should the government determine to place troops upon this road. It is also a place where the Comanches and Kioways frequently resort for the purpose of killing buffaloes. Moreover, no settlements can be made upon our road west of this point, as there is no place where the soil and timber will admit of it.

May 23.—We turned slightly to the left this morning, and, after travelling two miles, struck the main "Divide" of Washita and Canadian. Continuing on this "Divide" for thirteen miles, we passed several high round mounds of a very soft red sandstone, rising up almost perpendicularly out of the open table land, and can be seen for a long distance before reaching them. At the base of the southern mound, following an old Indian trail, it led us down into a deep ravine, where there is a fine spring of cool water, with wood and grass.

Our road from here took a direct course for a point of timber which can be seen from the top of the largest mound, but deviates somewhat from the general bearing. As we found little water to-day, we made this digression for the purpose of seeking a camping-place, and were much delighted, on arriving at the timber, to find a splendid spring of water, rising in a basin of white limestone, as perfectly hollowed out as it could have been done by art, and filled with fine cool water. About five hundred yards below this the stream formed by the water of the spring becomes enlarged, and contains an abundance of sunfish.

The soil upon our route to-day has been gravelly sand, and no timber except upon the borders of ravines. There is wood sufficient for encamping upon this stream, and fine grass.

May 24.—Our road continued on the Divide during the whole day, and was very fine and good. We are now passing through a country when gypsum is found in great quantities: in many places the surface of the earth is covered with a white incruscation of decomposed gypsum, and frequently large blocks were seen, in which there were all varieties, from beautiful transparent selenite to common "plaster of Paris," gradually merging from opaque to pure transparent. The fibrous varieties were also found frequently. The soil upon our road has been very poor, and but little water; at our encampment to-night we have water that is bitter and unpalatable, but will answer for cooking when none other can be obtained.

May 25.—Our road has kept the Divide all day and, as usual, was firm and smooth; passes over a gypsum formation, and many off the hills have been entirely composed of it. At our camp we have good wood and grass, but the water is as usual where gypsum abounds—far from being sweet.

We have seen many antelopes and turkeys during the last few days, but deer are becoming scarce as we advance. Buffalo tracks have been seen frequently. but as yet none of the animals themselves.

May 26.—We continued to follow the dividing ridge to-day for thirteen miles, when we came to a large lateral ridge, running off from the main Divide, which we followed, and did not discover our mistake until we had gone about three miles, where we encamped on a branch of the Canadian.

We found the wood and grass good, but the water continues slightly saline. There is elm, cottonwood, hackberry, and wild china upon the creek where we are encamped. As I was riding in advance of the train to-day I saw the first buffalo; there were two bulls, quietly feeding, about three miles from me. I gave them a chase of about ten miles, fired some five or six balls into one of them, but did not succeed in getting him to the ground. I had a most exciting chase, but it was very severe upon my horse, and I have no doubt it injured him more than three weeks' travelling. Poor fellow! he performed his part most nobly, for which I rewarded him with a good feed of corn on my return to camp; and, as he had been living on grass alone for several weeks, I have no doubt he felt well rewarded for his labor—at all events, his countenance assumed a most grateful expression when it was placed before him.

May 27.—To-day, (Sunday,) in accordance with a rule I have adopted, we "lay by," to give the men time to wash, and the animals to graze and recruit.

May 28.—We retraced our steps back to the dividing ridge this morning, and placed a stake, with directions to those following us "to keep the left hand trace." Our road passed from here to our camp upon high rolling prairie; with no water or wood, and we were obliged to turn from the dividing ridge down to the bank of the Canadian. We passed down over a gap in the bluffs; found good wood, water, and grass.

May 29.—The country we have passed over to-day, near the Divide, has been principally a formation of gypsum and blue limestone ledges, in which we discovered petrifactions of oysters and muscles. These are the first fossils we have seen upon our road.

We encamped on a branch of the Little Washita; found wood and grass abundant. The country between our road and the two rivers is much broken by hills and ravines, which appear to have been thrown up without the slightest reference to finish or utility; and I am convinced that the only place along near our route where a natural wagon road can be found is directly upon the crest of the Divide. From a high ridge near our camp we can see the Antelope, or Boundary mounds, far to the west.

May 30.—Our road was upon the dividing ridge all day, and very firm and smooth, but somewhat circuitous, following the windings of the "Divide;" this has generally been very direct, and, for the two hundred miles we have travelled upon it, I have never seen a better natural road. The country upon each side falling off towards the Canadian and Washita, leaves the crest perfectly dry at all seasons. There are numerous small branches rising near the road which are skirted with timber and grass, thereby giving the traveller an opportunity to encamp at almost any time he feels disposed. The soil is unfit for cultivation, being a hard gravelly sand, and very poor. We left the Divide near our camp, and are upon a branch of the Canadian; the water, wood, and grass are good.

May 31.—This morning we followed down the creek, and travelled for several miles upon the Canadian; finding this part of our road sandy, however, we soon turned back, and came upon the high prairie between two of the Antelope buttes. These hills are about one hundred and fifty feet high, of porous sandstone, and appear to be the result of volcanic action. They rise almost perpendicularly from the smooth prairie, are flat upon the top, and present every indication of having been raised out of the earth by volcanic agency. They are near the 100th degree of longitude, and are sometimes called the Boundary mounds, as being near the line formerly claimed by Texas as her eastern boundary. We encamped this evening without wood at some holes of water in the prairie; we could have found wood by going six miles further, but our mules were wearied, and I concluded to use the "buffalo chips" rather than drive that distance.

June 1.—Taking the "Divide" again this morning, we marched fourteen miles over a very direct and firm road, without a hill or ravine, until we reached our camp, upon a small lake on the high prairie. There is an abundance of never-failing water in the lake, and the buffalo grass grows luxuriantly upon its banks. This grass is very short and thick; but animals are extravagantly fond of it, and it is very nutritious. There are hills about a mile to the east of the lake similar to the "Antelope buttes;" these can be seen for a long distance upon our road, and are good landmarks. As it is half a mile from the lake to the nearest wood, I would recommend to travellers to throw a few sticks for cooking into their wagons before reaching here. We received a visit this evening from four Kioway Indians, dressed in their war costume, and armed with rifles, bows, lances, and shields. They were on their way (as they told us) to Chihuahua, Mexico, where they were going to steal mules and horses, and expected to be absent from here a year or more. I brought them into camp, presented them with some tobacco and pipes, gave them supper, and told them that we were disposed to be friendly and at peace with the Kioways; that it was the desire of their "great father," the President of the United States, to be on terms of peace with all his "red children." This appeared to please them, and they replied that they would communicate my "talk" to their people, who live forty miles north of here upon the north fork of the Canadian. I was much surprised at the ease and facility with which "Beaver" communicated with them by pantomime. This appears to be a universal language among Indians, and the same signs and gestures are made use of and understood by all tribes. The grace and rapidity with which this mute conversation was carried on upon a variety of topics relative to our road and their own affairs astonished me beyond measure. I had no idea before that the Indians were such adepts at pantomime; and I have no hesitation in saying that they would compare with the most accomplished performers of our operas.

June 2.—We travelled sixteen miles to-day over a very good road, with but little water near it, however, until we reached our present camp; here we have wood and water in a ravine. The country, as we advance, becomes gradually higher, and the soil continues poor, with but little timber. We are yet upon the "Divide" of the Washita and Canadian—about five miles from the latter, and three miles from a large branch of the former. The wife of one of the emigrants encamped near us has been sick for several days, and reported to-night as very low. The fatigue and inconveniences to which she is necessarily exposed in a journey over the prairies, has, no doubt, had a tendency to aggravate her disease. Being a lady of delicate constitution, and having never before been subjected to the privations and hardships of a camp life, she is but poorly fitted to endure in sickness a march of this kind.

June 3.—This being Sunday, we stopped to recruit our men and animals.

June 4.—We made a march of ten miles to-day, and reached Dry river, crossed and encamped on the west bank. We found bluffs about two hundred feet high on the east side, very abrupt, and crowned with ledges of sandstone; but after a short examination, discovered a pass which led us by a very gradual descent to the river bottom. The distance between the top of the bluffs, from one side of the stream to those of the other, is five miles, and the valley where we crossed about two miles in width. There is wood, water, and grass in abundance here, and it is a fine camping place. The bed of the stream is one hundred and fifty feet from bank to bank; but when we arrived in the evening there was no water, except in holes. The next morning, however, there was water running over the quicksand, forming a stream some ten feet wide. I could account for this in no other way than from the fact that the quicksand absorbs a large portion of the water flowing through the stream, and in the daytime the sun evaporates the remainder; but in the night, there being but little evaporation, the water not absorbed passes off over the bed of the river.

On approaching Dry river from the east, our road passed up the ridge dividing the head branches of the Washita from "Dry river;" here the Divide, which our road has followed about two hundred and fifty miles, turns away to the south, and from this place we see it no more. I am informed by Beaver, who is well acquainted with this part of the country, that this stream has its source in an extensive salt plain southwest of here, and that "Red river," which has never been explored to its head, rises in the same plain, and near the same place. It has generally been supposed that Red river extended far west of here, near the Pecos, and passed through a portion of the "Llano Estacado," but Beaver says it rises east of that plain. The Canadian, for the last two days' travel, has been shut in by high bluffs on each side, and the country between the bluffs and our road much broken by sharp round hills and deep gulleys.

The soil in this vicinity is totally worthless and unproductive; no timber fit for building, and but little water. We have seen many fresh Indian "signs" to-day, but no Indians. I have cautioned the emigrants to be vigilant in guarding their animals, as many of them continue to be very careless.

June 5.—We ascended this morning, through a smooth pass, to the top of the western bluff of Dry river, where we found ourselves upon a very elevated plain which divides the waters of Dry river from the Canadian. Passing along this on our course we made seventeen miles and encamped upon a small tributary of the Canadian, where we found good water, but standing in holes along the bed of the creek. We passed several of these streams to-day, and they were all similar to this. The soil is still poor, and wood scarce. The formation of the bluffs near our camp is sandstone of a very soft and porous character.

June 6.—We made a drive of twenty-two and a half miles to-day, but did not follow the "Divide" far, as it turned too much south. We crossed several dry ravines, where there will generally be water found, as it is but a few days since they became dry. We, however, found no water until we arrived at our present camp. This is upon a very beautiful, clear stream of spring water. The valley through which the stream runs is about five miles wide, and has a great deal of large cottonwood timber upon it. The grass is of the best quality, (mezquite,) and there is a little arable soil upon the banks of the creek. This is the largest affluent of the Canadian we have passed since leaving Spring creek. Notwithstanding it runs over a very wide bed of quicksand, yet there will always be running water found here, as the stream is fed by numerous large springs. It is one of the best camping places upon the road, and as some of our wagon tires are loose and require resetting, I shall "lie over" to morrow for that purpose From the fact of this stream having so much more timber upon its banks than the others we have passed, I have called it Timbered creek upon my map.

June 7.—We remained upon "Timbered creek" and repaired our wagons to-day.

June 8.—At seven miles from our last camp we crossed another stream of pure spring water, where there is wood and grass in abundance; and at our present camp we have another small spring creek, which will always afford sufficient water for the traveller's purposes. We left the Fort Smith company this morning at "Timbered creek." They were detained in consequence of the illness of the wife of an emigrant; and we have learned this evening that the result of the detention has been an addition to the company of two promising boys, (twins,) which the happy father has done Captain Dillard and myself the honor of calling "Dillard" and "Marcy." For my part I feel highly complimented; and if I never see the gold regions myself, I shall have the satisfaction of knowing that my name is represented there. I wish the young gentleman a safe journey to California, and much happiness and gold after he gets there. Our road has continued to approach the Canadian for the last three days, and we are now about four miles from it.

June 9.—After marching three miles this morning, we arrived upon the border of a deep valley, with high rocky ruffs upon each side, which we at once pronounced to be the stream Gregg calls "Bluff creek." Indeed, after we had passed it and ascended to the high plain on the opposite side, we fell into an old wagon trace, which confirmed me in the belief.

"Bluff creek" has good wood and grass upon its banks, and water plenty. It is of the same character as Dry river, with quicksand bed and poor soil in its valley. We followed Gregg's trace for several miles, and encamped in a ravine, where we found large pools of water coming from springs, with excellent grass and fuel. One of our gentlemen killed an antelope to-day, which we made our dinner from, and found it equally as good as venison. These animals frequent the highest and most arid plains, where no other animal ever resorts, and I have often found them where there was no water for many miles around. This has induced me to believe that they seldom require that element, without which most other animals perish in a short time. They are exceedingly timid; at the same time have much curiosity; and if the hunter will conceal himself in the grass, he can call them near him by showing his hand, or some other small object, above the grass.

June 10.—We made a late start this morning and travelled three and a half miles, when, ascertaining that there was no water for a long distance ahead, and Captain Dillard having marched about ten miles to overtake us, I determined to encamp at a ravine where we found wood and water. Although there may be times when there is no water here, yet I think it can always be depended upon, except in the very dryest season. This place cannot be mistaken, as it is due south of, and about two miles from, a very prominent round mound, which can be seen for several miles. We have passed over a high rolling prairie for the last three days, destitute of wood, except a narrow fringe of trees upon the borders of the ravines—a soil worthless and utterly unfit for cultivation. We found great quantities of grapes in the ravines near our road, growing on low bushes, very similar to those that are trimmed and cultivated.

June 11.—We started this morning, our road continuing over the elevated plateau, destitute of water, until we reached here, where there is a fine spring creek, with a great abundance of wood and grass. Our march was fourteen and three-quarter miles; and this position must be reached, as it is the first camping place after leaving our camp of last night. We are at this point about eight miles from the Canadian. We have several varieties of wild fruit upon the creek near our camp; among others, grapes and gooseberries. There has been but little game seen for the last three days. I killed a turkey this evening, which is the first we have seen for a week. Quails or partridges are found at all places upon our road; this bird and the meadow-lark appear to be common in all latitudes, from the extreme northern States to the most southern.

The streams through this part of the country have but few fish in them. We have, however, seen the sunfish and catfish wherever there is a stream of any magnitude.

June 12.—Our march this morning, for the first four miles, was over rather heavy and sandy road, after which we had a smooth prairie. The soil for several days past has been of a white, sandy appearance; but to-day, as soon as we struck a red soil, our road became at once as firm as marble, and our mules passed over it with great ease. Should travellers encamp at this place, they will be obliged to put a few sticks of wood in their wagons for cooking before reaching here, as there is none to be found on this stream. It requires but very little fuel to cook supper and breakfast, if it is properly economized. It should be cut short and split into small pieces; then digging a hole in the ground about twelve inches in depth, and of a size suitable for the wood and cooking utensils, all the heat is preserved, and a very small fire serves to cook a meal. We observed a very beautiful species of cactus along our road to-day, growing upon the high prairie to the height of six or eight feet. It shoots up from the ground in joints of about six inches in length, of an octagonal form, and every joint as it rises making an angle with the one beneath, sometimes branching off horizontally, and all nearly of the same size and length. A plant generally covers an area of ten or twelve feet in diameter, and, filled (as they are at this season) with a multitde of beautiful pink blossoms, they make the desert prairie look like a flower-garden. Our road has run nearly parallel to the course of the Canadian to-day, and the bluffs upon it can be seen nearly the whole distance. We have seen a few mezquite bushes during the past three days.

June 13.—The bluffs bordering the "Llano Estacado" have run parallel to our road, at from one-fourth to one mile distant, during most of the day. They are from 100 to 250 feet high, generally sandstone, covered in places with a growth of dwarf cedar. We marched 17⅞ miles over a very smooth prairie, and found an abundance of good water at four different places along to road.

As our wagon tires contined to become loose, from the shrinkage consequent upon the extreme dryness of the atmosphere in these elevated plains, I was desirous of finding a place where wood was plenty, in order that we might reset them. We were so fortunate as to find this a most favorable spot for that purpose, and at a convenient day's drive from our last encampment. Our present position is about half a mile from the road, to the left, near the timber. It is directly in a gap or notch, formed by the bluffs of the "Llano Estacado," which here jut in very near the road, and present the appearance of the walls of fortifications, with glacis revetted with turf. There is one near our camp, detached from the main bluff, that can be seen for many miles; and as it is round, very symmetrical, and crowned with a stone cap in the form of a reversed plate, it is a good landmark.

We passed a great deal of the small mezquite and numberless plants of the jointed cactus to day. The stalk of the latter is, when dried, a hard wood, and makes good fuel.

Our road has for a good portion of the day been passing through a continuous dog-town. One of the animals was brought alive into camp this evening, and having an opportunity to examine it, I was at a loss to conceive why it should ever have been called "prairie dog." It is a very timid animal; but, when irritated, bites severely, as one of our young gentlemen can testify. It is but little larger than the gray squirrel, of a reddish brown color, with head, teeth, and feet, very similar to that animal, and a more appropriate name, in my opinion, would be "prairie squirrel." In passing through one of their towns, early in the morning, they are observed sitting upright at the mouths of their burrows, entertaining each other by a most incessant barking, very similar to that of the gray squirrel. On the approach of an intruder they all disppear in their holes, but very soon can be seen poking their noses above ground again to see if the stranger is gone; and if so, the concert is resumed.

The rattlesnake and a small species of owl are found in the same holes with the dogs. At first I was doubtful whether this domestic arrangement was in accordance with the wishes of the owner of the premises, but, a short time since, I was satisfied no such friendly relations existed between them, for, on killing a rattlesnake at one of the dog holes, it was found that he had swallowed a young dog, thereby establishing the fact that the snake is an intruder, and preys upon the dogs.

June 14.—Leaving camp early this morning, we travelled two miles on our course, when we encountered a spur of the plain, running too far east for us to pass around under it; and finding a very easy ascent to the summit, I took the road over the plain. When we were upon the high table-land, a view presented itself as boundless as the ocean. Not a tree, shrub, or any other object, either animate or inanimate, relieved the dreary monotony of the prospect; it was a vast, illimitable expanse of desert prairie—the dreaded "Llano Estacado" of New Mexico; or, in other words, the great Zahara of North America. It is a region almost as vast and trackless as the ocean—a land where no man, either savage or civilized, permanently abides; it spreads forth into a treeless, desolate waste of uninhabited solitude, which always has been, and must continue, uninhabited forever; even the savages dare not venture to cross it except at two or three places, where they know water can be found. The only herbage upon these barren plains is a very short buffalo grass, and, on account of the scarcity of water, all animals appear to shun it. Our road was perfectly hard and smooth, and our animals did not suffer much from the effects of the long drive of twenty-eight miles which we made.

There are wood and water at nine miles from where we encamped last night; but from that point to our present camp is 18½ miles, and no water in the intermediate distances. Should travellers not feel disposed to make the long drive of twenty-eight miles, they will fidd a good camping place at the first point indicated, and will have an easy drive for the following day. Two miles before reaching camp we descended from the plain to a creek with fine water, but little wood.

June 15.—We travelled for ten miles to-day along the foot of the bluffs upon our left, when we reached a stream where the water was standing in large pools, with sufficient wood and grass. I determined to encamp here, the distance to the next water being about ten miles. This has been an old camping place for Mexicans, as the trees in the vicinity are well stripped of their branches, and show marks of the axe; moreover, we are now upon the old Mexican cart-road.

Our friends in the emigrants' camp are enjoying themselves much this evening; they have managed to raise some music, and are dancing around their camp fires most merrily. It certainly looks as if they were determined to keep up their spirits as they go along.

Jnne 16.—In consequence of a shower, which came up about daylight, we made a late start and travelled twenty-two miles, when I ascertained from an advanced party which I had sent out early in the morning that I was still nine miles from the first water; as our teams were too tired to make that distance I encamped for the first time without that most necessary element. Our mules will suffer, but I shall make an early drive and "lie over" to-morrow at the first water. I passed an ox-team to-day, owned by some men who had been left three hundred miles from here by a company in advance of us. One of their number had gone out for the purpose of hunting, and was lost. These men, with their team, had stopped back to search for him, and it was about ten days before they succeeded in finding him. They then started forward again, and have made a most extraordinary drive, averaging over thirty miles per day with a loaded wagon; and, notwithstanding they made a drive of thirty-eight miles yesterday, their cattle looked well.

This proves conclusively, I think, that oxen can perform a journey as well as any other animal.

About three miles from our camp of last night we came in sight of the "Cerro Tucumcari." It appeared to be about thirty miles distant, a little to the right of our course, apparently perfectly round and symmetrical, and is a most conspicuous landmark. It presents, when seen at a long distance, very much the appearance of the dome of the Capitol at Washington.

June 17.—We hitched up our mules at 2 o'clock this morning, and pushed ahead over the dry prairie for 13 miles before we found water; and this hardly deserved the appellation, for it had more the appearance of the drainings of a stable-yard than the pure element we were in search of. Notwithstanding this, our half-famished animals plunged in, and swallowed large quantities. It was sulphurous and decidedly disagreeable to the taste, yet we made use of it freely, and experienced no ill effects from it. Had we known the different points upon the road where water could have been obtained, we might have encamped at the last water, 22 miles from here, and easily driven to this place the following day.

Our present camp is nearly opposite the "Cerro Tucumcari," and near the bluffs bordering the plains "Indian signs" have been seen for the last three days, and the emigrants have lost several horses, supposed to have been taken by them. Notwithstanding this, many of them are very careless, and do not guard their animals as they should. It is necessary in the Comanche and Kioway country to be always upon the alert, as these Indians frequently follow a train for days together, only waiting for a favorable opportunity to steal horses.

A section of the vertebra of a buffalo, with several ribs attached, in a petrified state, was found to-day; also, several petrifactions of pieces of wood and muscles.

The slope of the bluffs for the last 25 miles has been covered with a dense growth of small cedar trees upon a white sandstone rock, and Beaver informs me that it is to such places as this that the grizzly bear and mountain sheep resort. We have seen no game for several days. Horned frogs, rattlesnakes, chameleons, and swifts, are abundant, and appear to constitute almost the only indications of animal life upon these desert prairies.

June 18.—We travelled this morning along under the bluffs for three miles, where we crossed an "arroyo," in which there were water and wood in abundance. At about eight miles we were overtaken by a party of 20 or 30 Comanches, who came upon their trim-built ponies to pay us a visit. Their chief was a fine looking old man by the name of Is-sa-ki-ep. He professed much love for Americans, and persisted in testifying it by giving me an embrace "à la Mexicaine," which, for the good of the service, I forced myself to submit to. Seizing me in his brawny arms (we were still mounted on our horses) and laying his greasy head upon my shoulder, he gave me a most bruin-like squeeze; after undergoing which I flattered myself that the salutation was completed; but in this I was mistaken, and was doomed to suffer another similar torture, with the savage's head upon my other shoulder, at the same time rubbing his greasy face against mine; all of which he gave me to understand was to be regarded as a most distinguished and signal mark of affection for the American people, (whom he loved so much that it almost broke his heart,) and which I, as their representative, had the honor "pour amor patria" to receive. They followed us to our camp, where I told the chief that it was the desire of their Great Father, the President of the United States, to be on terms of friendship and at peace with all his red children, and that he expected emigrants would receive good treatment in passing through the Comanche country. They protested the utmost friendship and good will; after which I gave them some pipes and tobacco, and they went off well pleased.

Our encampment is upon a small creek directly between two mountains, called by the Comanches the "Big and Little Tucumcari." The larger one is about three miles to the south of our road, and some eight miles in diameter at the base. The small one is about eight miles north of the road, two miles in diameter, and 750 feet high.

June 19.—As our animals have become a little jaded from the long marches we have been making for a few days past, I concluded to stop here and give them a day's rest.

We were visited again this morning by our Indian friend Is-sa-ki-ep and about fifty of his band, with several women and children. The Comanche women are, as in many other wild tribes, the slaves of their lords, and it is a common practice for their husbands to lend or sell them to a visitor for one, two, or three days at a time. There is no alternative for the women but to submit, as their husbands do not hesitate, in case of disobedience, to punish them by cutting off an ear or nose. I should not imagine, however, that they would often be subjected to this degradation; for, if we may judge of them by the specimens before us, they are the most repulsive-looking objects of the female kind on earth—covered with filth and dirt, their hair cut close to the head, and features ugly in the extreme. No one would ever imagine that they belonged to the same species as the Anglo-Saxon women. They have several Mexicans (slaves) among them which they have kidnapped. They make use of the boys to herd their animals, and the women for wives. Those who visited us this morning were armed with the bow, quiver, and shield, and they gave us an opportunity of witnessing the force with which they can throw the arrow. As we were about to slaughter an ox, one of the Indians requested to use his bow for that purpose, and approached to within abount twenty yards of the animals, strained his bow to the full extent, and let fly an arrow, which buried itself in the vitals of the ox, passing through and breaking two ribs in its course. It is thus that they kill the buffalo, upon which these Indians (who are called the upper Comanches, or "buffalo eaters") mainly depend for a subsistence.

They renewed their professions of friendship to us and all Americans. I recieved their assurances with the semblance of confidence—nevertheless, did not on that account exercise any less vigilance in the care of our animals; for these fellows make their living by robbing the Mexicans of their horses and mules, and disposing of such as they do not require to the traders who come among them.

The wealth of the Comanches consists entirely in these animals. They serve them to ride, carry their burdens, traffic, and for food when no other animals can be found. Many among them own from fifty to two hundred horses and mules; and that man who has only twenty is regarded as a poor man. It is considered a great accomplishment to be able to steal horses successfully, and those who excel in this are the most highly honored in the tribe.

The band near us, consisting of about 300 souls, have 2,500 horses and mules—many of them fine animals; and they generally have the Mexican brand upon them. They require much care and attention, as they are herded upon the open prairies, and never receive any other food than that which the grass furnishes. Their details of herdsmen are made daily, with as much regularity and system as the guard details at a military post. Their animals are divided into separate herds of about 150 each, and are guarded night and day with the strictest vigilance and attention. In the summer, these Indians follow the buffalo as far north as Arkansas river, returning in the autumn to the south as far as the headwaters of the Brazos and Colorado, where they find the grama, mezquite, and buffalo grasses. These, remaining green during the winter, afford pasturage for their animals until the following spring, when they return again to the north. Thus they migrate back and forth. They plant no corn, and their only food is meat and a few wild plants that grow upon the prairies.

One of the gentlemen of the Fort Smith company lost a horse last night, and, learning he had been seen at the Comanche camp, went for him, but, on his arrival, was told that he had not been there. The chief was in our camp at the time, and knew nothing of the matter until his return home, when he required the horse to be delivered to him by a young man who had taken him, and brought him back to me, ten miles, saying that he was our friend, and would not suffer us to be wronged by any of his band. This evidence of his sincerity went further to convince me of his good faith than all he had said or done before, and I did not suffer him to go away unrewarded. I have now no doubt but the Comanches, seeing such numbers of whites passing through their country, are satisfied that they are not able to cope with us, and that their best policy is to remain at peace.

I had a talk with them to-day, in which I told them that their Great Father, the President, having such a multitude of white children in the country towards the east that there was not room sufficient for all of them, had purchased another country far towards the setting sun, and that he was now sending, and would continue to send, many of his children through their country to occupy the new purchase. He hoped and expected the Comanches would not molest these people in their journey through their country, but would take them by the hand, and treat them as friends and brothers. That General Arbuckle (their father at Fort Smith) remembered well the treaty he had made with Ta-ba-guee-na and other chiefs of the Comanches at Fort Holmes, in 1834, wherein they stipulated that our people should be allowed a free and uninterrupted passage through their country. That he hoped they had not forgotten it, and he had sent them some pipes and tobacco to smoke in remembrance of the same.

The chief replied, that the talk was good; it did not go into one ear and pass out of the other, but sank deep into his heart and would remain there always. That he was a firm friend to Americans, and should treat them kindly wherever and whenever he met them. He was not one of those who took a friend by the hand and let him go whenever it suited his purposes, but that he held him fast, and remained true and sincere. He also stated that he had recently paid a visit to the Indian agent at Bent's Fort, had held a "talk" with him, and liked all the agent had said, except two things—one of which was, that our government would not suffer the Comanches to commit further depredations upon the inhabitants of the province of Chihuahua, or other parts of Mexico; the other, that they would be required to give up all Mexican prisoners now in their possession. These two things, he said, gave him much pain. After he concluded, I made him a present of tobacco and pipes, and some fresh beef, and they departed well pleased.

June 20.—Our march has been a long one to day, as we passed no water after leaving the head of the creek upon which we encamped last night. We are here upon the "Laguna Colorado," where the Texans were taken prisoners. Although there is but little water above the surface in the bed of the laguna, yet, by digging about three feet, we found the greatest abundance. Our camp is on the left of the road, near the timber, with a plain trail leading to it. Grass good.

June 21.—After marching seven miles this morning through a grove of cedars, we crossed an arroyo with many large pools of water, about 400 yards to the right of the road, where there is good camping ground, with timber and grass.

At our camp to-night we are seventeen miles from our last encampment upon Pajirato creed, a branch of the Canadian. It is a good camping place; and should travellers pass over this road towards Fort Smith in a very dry season, I would recommend them to encamp here, and the following day at the large pools I have spoken of as seven miles from our last camp, as there is a greater quantity of water at that place than where we encamped upon the Laguna Colorado. They would then be able to drive to the head of the creek, where we met the Comanches, the following day.

June 22.—We travelled over a smooth dry prairie to-day for thirteen miles, and encamped upon "Gallenos creek," an affluent of the Rio Pecos. Here we had good water, with some cottonwood upon the creek, but the grass is short, the Mexicans having recently made this a pasture ground for large flocks of sheep. We have passed many high sandstone hills on each side of our road to-day, and we have seen far off in the distance the northwest mountains, with their tops covered with snow. The country in this vicinity is a miserably sandy plain, and fit for no other purpose but for grazing sheep.

June 23.—Our road passed for fifteen miles over a very high rolling prairie, with detached rocky hills upon our right, running off towards the Canadian, until we reached the principal branch of the Gallenos creek; a fine running stream, with a rock bed, and fifty yards wide. Nine miles from here there is a spring of cold water; and at this place the road forks, the right leading to San Miguel, the left to Anton Chico. We took the latter, and reached the Pecos before night, making a drive of thirty-one miles. This was the first settlement we had seen since leaving Edwards' trading-house; and we were much delighted to see houses and cultivated fields once more.

Anton Chico is a town of about five hundred inhabitants, situated upon the west bank of the Rio Pecos, built (as all towns in New Mexico are) of "adobes," or unburnt blocks of clay, and looks at a distance like many piles of unburnt bricks. The inhabitants raise corn, wheat, onions, beans, and peas, upon which they subsist.

June 24.—After our long march of yesterday, I determined to remain here to-day, and rest our animals. This is St. John's day, and with the Mexicans a gala day, in which they all congregate, for the purpose of running horses, fighting chickens, dancing, and a variety of other amusements, in which they all participate with real hearty good will. In the evening I visited a fandango for a few minutes, where I saw the Mexicans in their favorite national amusement, the dance; and I was much surprised to see with what ease and grace a "peon," who is degraded to a condition worse than slavery, and is constantly employed in the lowest kind of menial services, would hand his signorita to the floor to engage in a gallopade or waltz. They are really very graceful.

June 25.—From all I could learn at Anton Chico relative to the road to Santa Fe, I inferred that the one passing through Galleno was the shortest and best. I therefore took this in preference to the San Miguel route. After crossing the Pecos, which we here found a very rapid stream of one hundred feet wide and two feet deep, we travelled over a well-beaten wagon road for fifteen miles, when we came opposite a beautiful little town on the Pecos, called "Questa." As the main road does not pass in sight of the town, I took a trail which can be easily travelled with wagons, and rode out until I suddenly and unexpectedly came upon the crest of a bluff terminating the high plain. Here, a most magnificent view presented itself as I stood upon the top of the almost perpendicular cliff bordering the valley of the Pecos, and one thousand feet above it: I could see the valley up and down the river for several miles. It is here about one mile wide, and shut in with immense walls of lime and sandstone. Casting my eyes down from this giddy height, a magnificent carpet of cultivated fields of wheat, corn, and other grains was spread out direct beneath me, with the beautiful little river winding quietly and gracefully through the centre; this, together with the Mexicans in their broad-brimmed sombreros and strangely shaped costume, plodding quietly along behind their ploughs and "carretas," and the "Sierras Blancos," covered with perpetual snow, and glistening in the distance like burnished silver as the sun shone upon them, formed one of the most beautiful landscapes that it is possible to conceive of. The town of Questa is upon the opposite bank of the river, and has about eight hundred inhabitants. I called at the house of the alcalde, but unfortunately he was absent. "El Signora," however, gave me a dinner, and did the honors of hostess with much hospitality and grace; and I am indebted to her for a most capital repast. I would advise those who pass over this road in future to turn from the main road about two miles before arriving opposite here, and encamp at the place where the road strikes the top of the bluffs. They will here have grass and wood, and can drive their animals down into the valley for water. Our camp is ten miles from Questa, at a pool where we expected to have found water.

June 26.—This has been the longest day's march we have made since leaving Fort Smith, (33¾ miles.) Twelve miles from our last camp we passed several lagunas or ponds, where we watered our animals, and gave them two hours' rest. At this place there are two roads—the left goes to Albuquerque, the right to Santa Fe. Taking the latter, it led us over a very hard prairie until we reached Gallestia.

June 27.—This town is situated on a creek which rises in the mountains near by, and runs through a dry plain into the Rio del Norte at San Domingo. We found a large encampment of emigrants here, recruiting their animals, laying in their supplies of provisions, and making preparations for their outward journey to California.

They bring their teams to this place to graze; and it is the nearest point to Santa Fe where they can find grass. They then visit Santa Fe, make their purchases, and return.

From this place to Santa Fe there are two roads. We started out in the evening, and took the right hand after passing the point of the mountain near the town, and travelled nine miles, encamping in a ravine running down from the mountain; found the grass here short, as it is everywhere in the vicinity of Santa Fe.

June 28.—Continuing up the ravine this morning, we struck the Independence road at the top of the mountain, and from here continued in it until we reached Santa Fe, about four o'clock in the evening.

The geological formation of the country changed the moment we entered the Independence road. Up to this time we had seen no primitive rocks, but now our road wound through the "cañons" of the mountains, bordered by cliffs composed of huge masses of granite, until we arrived within five miles of Santa Fe; from here to the town the country is a succession of barren hills, covered in places with a growth of dwarf cedars, destitute of grass and totally unfit for cultivation.

The route we have travelled over from Fort Smith to Santa Fe, as measured with the chain, is 819½ miles; and, for so long a distance, I have never passed over a country where wagons could move along with as much ease and facility, without the expenditure of any labor in making a road, as upon this route. Our course being altogether upon the south side of the Canadian, and generally upon the ridges dividing the tributaries of that river from those of Red river and the Washita, until we reached the grand prairie, we were not obliged to cross any large streams, and but few ravines or gullies. After passing beyond the head of the Washita we found the plains approached and continued near the Canadian; consequently all the streams flowing into it were short and small, thereby affording water sufficient for the traveller's purposes, but not presenting any obstacle to his progress.

The general course of the Canadian, along our route, is east and west; and as Santa Fe is almost due west from Fort Smith—the latitude of the former being N. 35° 44′ 6″, of the latter about N. 35° 20′—this makes our route very direct between the two points. The country lying between the two meridians of Fort Smith and Santa Fe is intersected by a narrow belt of timbered land, running from north of the Canadian to the southern part of Texas, and varying from ten to thirty miles in width. This, bordering the great western plains, forms the boundary line between the woodlands and prairies. That portion of the country lying east of this is generally a rich and fertile soil, varied by lawns and woodlands, abounding with a multitude of beautiful streams and rivulets, and in every respect well adapted to cultivation; whereas, on the west, it is an ocean of barren prairie, with but here and there a feeble stream and a few solitary trees.

It would seem as if the Creator had designed this as an immense natural barrier, beyond which agriculturists should not pass—leaving the great prairies for the savage to roam over at will.

There are no ranges of mountains to cross over on our road, and but few hills of any magnitude; and these could in most cases be avoided entirely by passing around them, or their slopes made very gradual and easy. Generally, the face of the country is extremely uniform and smooth.

I am, therefore, of the opinion, that but few localities could be found upon the continent which (for as great a distance) would present as few obstacles to the construction of a railway as upon this route. It is true that, upon the western extremity, there is but little timber except cottonwood; but, in many places destitute of timber, there are large quarries of lime and sandstone, whose divisional structures are so perfectly smooth and uniform that the masses could easily be wrought into shape, and in many cases made use of as substitutes for timber. The surface of the ground is generally so perfectly even and level that but little labor would be required to grade the road; and, as there are but few hills or ravines, there would not be much excavation or embankment.

Table of distances, &c.

Dates.	Places of observation.	Distances by chain.		Remarks.
		From camp to camp.	Total distance from Fort Smith, Ark.	
1849.				
April 6	From Fort Smith to Strickland's	15	15	Good camp.
	Camp creek	11	26	Good camp; Indian farm.
	Coon creek	12	38	Good camp; prairie.
	Sans Bois	9	47	Good camp on the west side, near the prairie.
	Bend of Sans Bois	14	61	Good camp; Indian farm.
	South fork Canadian, James creek	15	76	Do do
	1st ford of Coal creek	12	88	Good camp; house.
	2d ford of Coal creek	8	96	Do do
	Little Cedar mountain	4	100	
	Stony Point	6	106	
	Shawnee village	5	111	Indian houses.
	Shawneetown	14	125	Indian houses, opposite Edwards' T. H.
	Delaware mountain	21	146	Good camp.
	Branch of Boggy river	5	151	Do
	Clear creek	3	154	Wood and good water.
May 3 to 5	Branch of Topofki creek	7	161	Do do
5 to 7	Cane creek	9½	170½	Do do
7 to 8	Small branch	5	175½	Do do
8 to 9	Mustang creek	11½	187	Do do
9 to 14	Small branch of Chouteau's creek	17[illegible]	205[illegible]	Do do
14 to 16	do do do	6[illegible]	211[illegible]	Do do
16 to 17	do do do	5[illegible]	217[illegible]	Do do
17 to 18	Head of Chouteau's creek	12[illegible]	[illegible]	Do do
18 to 19	Branch of Washita	6	236[illegible]	Good camp.
19 to 21	do do	11[illegible]	247[illegible]	Do
21 to 22	Branch of Spring creek	5[illegible]	253[illegible]	Do
22 to 23	Head of Spring creek	16	269[illegible]	Do
23	Road from N. Canadian side	9	278[illegible]	No water.
	Red Mounds	4	282[illegible]	Spring, wood, and grass.
23 to 24	Branch of Washita	5	287[illegible]	Do do

Table of distances, &c.

Dates.	Places of observation.	Distances by chain.		Remarks.
		From camp to camp.	Total distance from Fort Smith, Ark.	
1849.				
May 24 to 25	Branch of Canadian	15¾	303	Sulphur water.
25 to 26	Branch of Washita	17¾	320¾	Do
26 to 28	Branch of Canadian	18	338¾	Brackish.
28 to 29	On Canadian	19	357¾	Good water.
29 to 30	Little Washita	16	373¾	Brackish water.
30 to 31	Branch of Canadian	13	386¾	Good water.
31 to June 1	Antelope Buttes	17¼	404	Good water; no wood.
June 1 to 2	Rush lake	14	418	Near high buttes; no wood; good water.
2 to 4	Branch of Washita	16	434	Near large cotton-wood; wood and water.
4 to 5	Dry river	10¼	444¼	Good water.
5 to 6	Branch of Canadian	17	461¼	Do
6 to 8	Timbered creek	22¼	483½	Fine spring.
8 to 9	Spring branch	11¾	495¼	Good water.
9 to 10	do	14	509	Do
10 to 11	Branch of Canadian	3¾	512¾	Near high mound; good water.
11 to 12	do do	14¾	527½	Good water.
12	do do	8	535½	Not our camp.
12 to 13	do do	10¾	545¼	No wood; good water.
13 to 14	Spring branch	17¼	563¾	On the left of the road.
14	Branch of Canadian	9½	573¼	Not our camp.
14 to 15	do do	18¼	591½	
15 to 16	Pools of water	10½	602	Wood.
16	Large water	10	612	Not our camp.
16 to 17	No water	12	624	
17 to 18	Pools of water	13	637	Wood.
18 to 20	Tributary of Canadian	13¼	650¼	Near Cerro Tucumcari; wood.
20	Head of Creek	5	655	Not our camp.
20 to 21	Laguna Calorado	19¾	675¼	
21	Pools of water	7	682¼	Not our camp; good wood.
21 to 22	Pajarito creek	10¾	690¾	Wood and water.

22 to 23	Gallenas creek	13¾	706¼	Wood.
23	2d Gallenas creek	15	721¼	Large wood and water; not our camp.
23 to 25	Rio Pecos (Anton Chico)	16¼	737½	Wood and water.
25	Rio Pecos (Questa)	15	752½	Camp on the bluffs.
25 to 26	Without water	9¼	761¾	Good wood and water.
26	Laguna Colorado	12¼	774	Two red ponds on left; not our camp.
26 to 27	Gallestra	21½	795½	Good water.
27 to 28	In cañon	9¼	804½	No water.
28	Santa Fe	15	819	

NOTE.—From Fort Smith to Clear creek the road has an abundance of wood, water, and grass upon it, and the traveller can encamp any time he chooses.

Immediately after our arrival at Santa Fe I sent our mules to Tocolote, about sixty miles off, to recruit. This was said to be the nearest and best place for grazing in the vicinity of Santa Fe. I made arrangements also to have them fed with corn while they were at the grazing camp, in order that they might be in a condition to travel and make the return march at as early a period as possible. They were, however, in such poor condition when we reached Santa Fe, that it required six weeks' rest before I considered them sufficiently recruited to perform the journey back.

In the mean time, during our stay in New Mexico, Lieutenant Buford, with the dragoons of my command, was ordered to "Jamies," (seventy miles,) upon an expedition against the "Navajo Indians," who had been committing depredations in that quarter, and was absent about three weeks upon this service. Lieutenant Harrison and Dr. Rogers were also (at their request) assigned to duty with a detachment sent out on an expedition against the Apaches, under Major Steen, and marched about six hundred miles through the country south of Santa Fe, while I remained with the infantry portion of my command as the only garrison of Santa Fe.

I made inquiries relative to the practicability of finding a wagon route from a point south of Santa Fe, upon the Rio del Norte, crossing the Rio Pecos and striking in an easterly course to the headwaters of Red river, or the Brazos, and from thence back to Fort Smith; but, as the country lying east and adjacent to the Rio del Norte is for the most part infested by Apaches and other hostile Indians, I found but few Mexicans who knew anything about the country, and these were unwilling to act as guides and return home alone through the Indian country. I, however, found, a Comanche Indian living at San Miguel who was born and raised directly in the country over which we desired to pass, and was perfectly familiar with almost every stream and water-hole upon the prairies. It was his opinion that wagons could pass without difficulty from a point of the Rio Grande called "Joya de Cibaletta," about one hundred and fifty miles below Santa Fe, to the headwaters of the Colorado, crossing the Pecos at a grove of timber called "Bosque Redondo," about seventy-five miles below Anton Chico. Upon this route he stated that he could take the wagon train from Santa Fe to the head of the Colorado in one month, and would insure water for the mules every night. He furthermore stated that there were but three places where the Llano Estacado, or Staked Plain, which extends four hundred miles from north to south on the east side of the Rio Pecos, could be crossed, on account of the scarcity of water; one of them was north of the "Joya de Cibaletta," and another nearly opposite El Paso. As all the California emigrants, after their arrival at Santa Fe, are obliged to turn and go down the Rio Grande (some three hundred miles) to Cooke's route, before they can find a wagon road through the mountains west of the river, it occurred to me, that if there was a practicable route from that point to Fort Smith, it would shorten the distance to California very much; and as several parties of emigrants had reached El Paso from Texas, I was satisfied I could go through, and I employed the Comanche guide and determined to return by the southern route. Previous to our departure Lieutenant Sackett had been promoted to the company to which the dragoon portion of the escort belonged, and Lieutenant Buford having been promoted to a company stationed in California, they were transferred by order of the commanding officer at Santa Fe. These, with the exception of one man left sick at Santa Fe, were the only changes in the command from the time we left Fort Smith.

From Santa Fe we struck the Rio Grande at Algodones, and followed the road down the east bank of the river until we reached Fra Cristobal on the evening of the 25th of August.

At this point the bluffs of the mountains approach near the river, and render it nececsary to keep to the left across a large bend, where in a dry season there is no water, until reaching the river again; this is the commencement of the "Journado del Muerto."

Leaving Fra Cristobal at two o'clock on the morning of the 26th, and passing up through a cañon out of the valley of the Rio Grande, we entered the dreary plain of the Journado, and marched to the "Laguna del Muerto," a distance of 25⅞ miles by the viameter. Although there is sometimes water in the Laguna for several days after a rain, yet, when we arrived, the bed was perfectly dry. We had, however, filled our water barrels at the river, and the men did not suffer. After resting our animals and giving them time to graze, we again started forward, and marched to Perrillo or "Point of Rocks," 28¼ miles. Here we found rain-water standing in pools, and encamped for the night.

On the 28th, after marching 23¼ miles, we reached the river again at the southern extremity of the Journado, making the entire distance across the desert 77½ miles. The road passes over a very high and level plain, is perfectly firm and smooth, and is generally travelled (when there is no water) in two nights and one day with loaded wagons. As this is upon the main and only road from Santa Fe to El Paso, and has been travelled for many years by the inhabitants of New Mexico, I presume there is no way of avoiding it. We found the grass good, and a small growth of scrubby brush, which answered very well to cook with; but there were no trees or other vegetation, except several varieties of the cactus and palmetto.

Upon both sides of the road there were detached mountains in sight constantly, and one near which we passed soon after leaving Fra Cristobal was composed entirely of large masses of dark basalt thrown together loosely into an immense hill or mountain of some five hundred feet high.

On the 29th we reached Dona Ana, a town upon the east bank of the Rio Grande, sixty miles above El Paso, of 300 inhabitants, principally Mexicans, who raise corn, wheat, onions, beans, and grapes, and depend for a subsistence almost entirely upon the cultivation of the soil. They are obliged here, as in all places in New Mexico, to irrigate, as without this the soil would produce nothing. The only available land is, therefore, in the valley, where water can be carried in canals or ditches from the river.

This is a new town, settled by men from El Paso some ten years since, and, until it was garrisoned by a part of a company of United States troops, was frequently visited by those brigands of the mountains, "the Apaches," who were in the habit of coming down from their mountain retreats, stampeding and driving off cattle and horses, and before the Mexicans were aware of their proximity, were out of reach again in the mountains.

These Indians are perfectly lawless, savage, and brave, and having been allowed to roam the country at will, and commit depredations upon the Mexicans for so long a time, it will require a very severe lesson to teach them that we are masters in New Mexico. Being a numerous tribe, and commanded as they are by an ambitions chieftain by the name of "Gomez," who has received a Spanish education in Mexico, and being entirely dependant upon plunder for a subsistence, I am of the opinion that they are destined to give us much anoyance and trouble before they are subdued.

Dona Ana being but fifteen miles below San Diego, (the point upon the Rio Grande where Colonel Cook's road leaves the river,) and the only town within seventy miles, I was anxious to find the shortest practicable wagon road from here to Fort Smith. I therefore made inquiries relative to the country between here and the Rio Picos, but found that this part of the country was almost wholly unknown to the Mexicans, as (although they are great travellers) it is seldom that they can be induced to venture far into the Apache "range." I found one man, however, who stated that he knew the country for fifty miles east of Dona Ana, and, upon condition that I would deposite the amount he was to receive with the commanding officer for the benefit of his family in case he should be killed in returning, he would consent to accompany us that distance. I accordingly engaged him, and on the morning of the 1st of September left Dona Ana, taking a course N. 81° E. towards a gap in the Organ range, called San Augustine Pass. Our road passed to the left of the high Organ peaks by a gradual ascent for fifteen miles until we reached the gap, which was low, and the passage smooth and easy. From here we passed around to the south for four miles under the base of the mountain, where we encamped at a spring, and found fine grama grass. The Organ range of mountains takes its name from the supposed similarity of the high-pointed peaks to the pipes of an organ. They are a trap formation, and somewhat columnar in their structure, with the columns standing vertically, and in some cases rising to the height of a thousand feet, and terminating in sharp points.

Upon the lower part of the mountain there is good pitch-pine timber, but no other wood except a species of small oak. From our present position we can see the Sacramento mountains very distinctly across a level plain to the east. They do not appear to be at a greater distance than eight or ten miles from us, but our guide informs me they are forty miles off; this illusion is often experienced in New Mexico, and I can only account for it by the remarkable purity and transparency of the atmosphere, which enables the eye to penetrate far, and to discern objects distinctly.

September 2.—Continuing along under the base of the Organ mountains, we struck the road from El Paso to the Salt lakes at about three miles from our camp of last night, and followed this for three miles further to a spring which rises in the mountain, and runs down a ravine upon which we are encamped, to the road.

This is called the "Ojo de Solado," and has an abundant supply of water at its source, but sometimes it is absorbed by the sand before it reaches the road, and it is then necessary to send to the foot of the mountain for water, as we cannot drive wagons nearer than the road.

The Sacramento mountains are in sight to-night, and the two ranges, "Organ" and "Sacramento," run nearly parallel from north to south, and from thirty to forty miles apart. The intervening valley is flat and sandy, and has no water upon it. As we had to cross this valley, we provided ourselves with a supply of water for the use of the men, and on the morning of the 3d September left camp, and following the Salt road for about four miles, struck in a direct line for "Waco mountains," which can be seen from our last camp, and where we were told by the guide we should find water. As the road was somewhat sandy and we had to make a new track, our progress was necessarily slow. After travelling eighteen miles we halted at 6 o'clock in the evening, giving the men time to sleep, and the animals to graze and rest, when we were again in motion, and reached the Waco mountains at 2 o'clock p. m. on the 4th of September, making the entire distance from the Solado spring to this place 37$\frac{1}{10}$ miles, about seven miles greater than the estimate of our guide.

The manner in which the Mexican traders make these long stages without water (and I believe it to be the best) is, before starting, to graze their animals from morning until about 3 p. m., give them all the water they will drink, then harness and start them immediately, and drive until 4 o'clock the next morning, when they stop three hours to graze while the dew is on the grass, and drive until it becomes hot towards the middle of the day; they then make another halt until 5 o'clock in the evening, when they start again and push through to the water. In this way fifty, sixty, or seventy miles can be made with loaded mule or ox wagons in the hottest weather of the summer. The Journado del Muerto is 77 miles in length; yet it is travelled during the whole year with heavily loaded teams. After these long drives, animals should be allowed a day or two to rest and recruit.

Our present encampment is but thirty miles from El Paso, and our guide informs me that the road is not so sandy as the one we have passed over; but our route is about thirty miles nearer from this point to Dona Ana, than to go the El Paso road. There is a plain wagon road from here to El Paso. We found a great abundance of good water in an immense tank up a ravine on the South mountain. This is a huge deep basin, scooped out of the solid rock with great symmetry and regularity, and of sufficient capacity to contain several hundred gallons of water. We also found sufficient water for our animals in the ravine. The road passes between the two mountains, which approach within a few rods of each other, leaving a level pass, bordered by immense ledges of rocks, standing out in bold relief directly over the road. The rocks composing the mountains are large masses of dark-gray sandstone, thrown up in the utmost disorder and confusion, leaving numerous holes and caverns, which have often served the Apaches as hiding places.

We remained at this place on the 5th, and on the morning of the 6th, making an early start, crossed a plain in an easterly direction towards the south base of the "Cierra Alto," which is about 1,500 feet high, and can be seen for many miles around. Here we entered a canon, which brought us by a very easy and gradual slope, of about three miles, to high level mesa or plain, directly at the southeastern base of the mountain.

From this point we would see the Sierra del Alamo, in a direction north 75° east, and to this our road led us over a firm prairie, a distance of 22¼ miles.

The Sierra del Alamo is a mountain of gray sandstone, mixed with flint rock, about 1,000 feet high, and stands out alone upon the flat prairie. On the north side, about 300 yards from the road, is a spring near three cotton-wood trees, with an Indian trail leading to it. The spot cannot be mistaken, as there are no cotton-wood trees anywhere else in the vicinity.

Our road to-day, with the exception of one place in the cañon, was capital, passing over a prairie perfectly hard and smooth.

Along the whole course of the road from Dona Ana here, there has been a most luxuriant growth of grama grass of several different kinds, and we find sufficient fuel for camping purposes at all places.

September 7.—We passed around the north base of the "Cierra" this morning, when we came in sight of the rugged top of the "Comudas," in a direction N. 72° E.; from here our road was over the gravelly mesa, and perfectly good for 8¾ miles, which brought us to the "Comudas." This is another of those immense piles of loose rocks, which, rising up almost perpendicularly to the height of 500 feet out of the level gravelly plain, and utterly denuded of vegetation, presents a most strange and picturesque appearance, very different from any scenery we meet with in the settled parts of the United States. Upon the east side of the "Comudas" there is an arched entrance into a large cavern which is lighted from above, and in this we found a well fifteen feet deep, filled to the top with beautifully pure water; besides this we found water sufficient for our animals in tanks on the west side of the hill.

Our guide informed us that this is a favorite place of resort for the Apaches, who come here when travellers are seen approaching, hide themselves in the caverns of the mountains, and rob them of their horses, and cautioned us to be upon our guard on our arrival, as they might be in the midst of our animals before aware of their presence: we have, however, seen none of them.

The geological formation of this mountain is different from any we have passed before, being a dark coarse granite or gneiss, with a small proportion of feldspar, and the mica predominating. All the other rocks we have seen before, between this place and the mountains at Santa Fe, have been secondary.

September 8.—Our road to-day led us around the east side of the Comudas, to the north end, where we turned almost due east, and travelled towards the southern peak of a high range of mountains called the "Sierra Guadalupe." For the first five miles we passed directly at the foot of a low range of hills running northeast and southwest, after leaving which we struck out upon the high prairie, and found the road most excellent the entire distance to the Ojo del Cuerbo, or Crow Spring. The spring is upon the open plain, and contains a large supply of water at all seasons; and, although it is sulphurous, yet animals are very fond of it, and we found it to answer, in the absence of better, for drinking and cooking.

Two miles from here our road crossed the dry bed of the outlet to the Salt lakes some twenty miles south of this; there was a thin, white incrustation of salt over the bed of the stream. Vegetation has been of the same character to-day as heretofore, and the grama grass growing everywhere upon the road. Our march has been 26 miles, but the road so good that our animals did not suffer, and we reached camp early.

September 9.—Our course this morning, after leaving the Ojo del Cuerbo, was south 49° east, bearing directly for the peak of the Guadalupe, until we arrived nearly opposite to it on the west side; we then continued past it, gradually turning to the left around the hills at the base until we reached a rocky ravine which led us directly up to the foot of the towering cliff of the peak. We encamped near the head of the ravine, where there is a spring about 200 yards north of the road, and good grass. Animals must be driven up the ravine to the water, as the wagons cannot pass further than the turn of the road.

We had a good road to-day, with the exception of four miles of sand, and made twenty-three and one-twentieth miles.

The Guadalupe range of mountains terminates at this place in an immense perpendicular bluff of light-colored sandstone, which rises to the enormous height of nearly two thousand feet, and runs off to the north-east towards the Pecos. On the south of the peak there is a range of bluffs about two hundred feet high, running from north to south across our course, and over which we have to pass. At about ten or twelve miles south of here this bluff appears to terminate; but as we can pass up without difficulty at this place, we shall not go out of our course to avoid it.

September 10.—We remained in camp to-day until about 3 oclock p. m., when, getting our wagon train up the hill, we found ourselves upon very high rolling table land, which our guide says descends from here to the Pecos river. As we have been continually ascending from the Rio Grande to this point, we are therefore now upon the summit level of the two streams. As it rained most of the afternoon, we only made a short march of four miles, passing in a northeast direction around under the mountains, and encamped in a ravine which runs down through a large grove of pine timber from a gap in the Guadalupe mountains; there is a fine spring three hundred yards to the west of the road, which affords an abundant supply of water.

The mountains are covered on the eastern side with groves of large pine trees; and as this is the only kind of timber fit for building in the country, it may some day be useful. We have also seen a species of cedar with the bark resembling that of the oak, and very different from any we have ever seen before.

There are many varieties of the cactus and palmettos about the mountains, and we have this evening for the first time seen the maguey plant, which constitutes almost the only vegetable food that the Apaches and southern Comanches get for a great portion of the year. They prepare it by boiling it until it is soft, then mash it into a paste, and I am told that in this form it makes a very palatable, nutritious food.

The Guadalupe is the last of the mountains between the Rio Grande and the Pecos. It appears there are three distinct ranges of mountains traversing the country east of El Paso in a north and south direction: the first the Organ range, twenty miles east of the Rio Grande; thirty miles from this the Sacramento, the continuation of which, about fifty miles north of Dona Ana, is called the "Sierra Blanco," and has perpetual snow upon its summit; from thence it extends on to near Santa Fe. The third is the range of the Guadalupe, fifty miles east of the second.

These wild and rocky mountain ranges are the places where several animals resort that are to be met with nowhere else. The grizzly bear (the most formidable animal of the continent) finds a lurking place in the caverns and thickets, and feeds upon the wild fruit that abounds here. The big-horn, or cimarron, is also seen skipping playfully from rock to rock upon the narrow overhanging crags, and cropping the short herbage which grows upon them: these, with the black-tailed deer, are almost the only animals found upon these mountains. One of the latter was killed this evening, and we found it very similar to the common fallow deer of the States, but much larger.

There are but few varieties of birds upon the prairies: we have, however, seen quails at all places we have been, and occasionally a few plover and English snipe.

September 11.—As our animals were somewhat jaded from the long marches we have made for a few days past, and as we had a long journey before us, I remained in our camp of last night until after dinner to give them rest, when we moved forward over a good road to Independence spring, five miles.

Here we found two large springs of pure cold water, which boil up from the ground and run off in a stream about the size of a barrel, with a great supply of oak wood and grama grass near, rendering it a most derirable place for encamping.

The country from the base of the mountains to this place is rolling, and the soil good.

The peak of Guadalupe, and the general outline of the chain, can be seen from here, and it appears to be impossible to pass through it with wagons anywhere north of our route; and as the defile is near the peak, which can be seen for many miles around, it is a good landmark.

About twelve miles south of this are several salt lakes, which our guide informed me had been formerly resorted to by the Mexicans for salt; but that since the Indians had become hostile, they did not venture to go there. The salt is deposited in a pure state upon the bed of the lake, about six inches in thickness; and when the water becomes low and recedes from high-water mark, it can be shoveled up in large quantities. The Salt lake north of El Paso is of the same character, and furnishes all the salt that is consumed in New Mexico and several of the States of southern Mexico. From specimens that I saw, I should imagine it to be pure chloride of sodium, with a very strong saline taste, and equal to the best Turk's island salt.

As it rained nearly all day to-day, the 12th September, we did not move.

On the 13th we started forward again, and travelled over a hard rolling prairie, passing many round symmetrical mounds on each side of the road, until we reached the Ojo de San Martin, at the head of the Delaware creek, our average course being south 85° east, and the distance travelled $15\frac{1}{10}$ miles.

The mounds were standing isolated and detached from the other hills around, and were as regularly symmetrical as they could have been made by art, being composed of an alternate strata of lime and sandstone lying horizontally upon each other in thin plates like slate, and receding in terraces from the base to the top, the shape in all cases being conical, and almost as round as if cut out for a monument. We noticed one with a cap upon the top, in the form of an inverted plate, which, from its peculiar shape, the Mexicans call "centirula."

We saw a fresh Apache trail crossing our road to-day, and, as they are probably hovering about us for no good purpose, I shall see that our animals are guarded with great care. Our custom has been to herd them during the day in the immediate vicinity of the camp; at night the mules are driven into a "corral," formed with the wagons arranged in a circle, and the horses picketed together near the tents of the men, with sentinels walking among them constantly. In this way I think we shall baffle Messieurs "Los Apaches," notwithstanding they have the reputation of being the most expert and boldest horse thieves in the west. They have often had the impertinence to enter the Mexican towns in open daylight, drive off animals, and take women and children prisoners, before the faces of the soldiers stationed there; indeed, they are as inveterate freebooters as can be found on earth.

There are several springs at this place, the waters of which unite and form the Delaware creek. One of them, the Ojo de San Martin, bursts out of a solid limestone rock in a volume of sufficient magnitude to drive an ordinary saw-mill at the fountain-head, and is as pure, sweet water as I ever drank.

Above this there are several others possessing different mineral properties. One is highly charged with sulphuretted hydrogen, and tastes very much like the Kentucky "Blue Lick water." Another is decidedly chalybeate, and a third is strongly sulphurous, leaving a thick incrustation of sulphur upon the rocks for many yards from the source.

These unite in one common outlet, and the amalgamation is far from pleasant to the taste.

Is it not within the scope of probabilities that these springs may be found to possess valuable medicinal properties, and that this place may yet (and at no very distant period) become a place of fashionable resort for the "upper-ten-thousand" of New Mexico? The climate here is delightful, the atmosphere perfectly elastic and pure, and the temperature uniform and delicious; then, may not an invalid derive as much benefit at this place as at Saratoga or any other of our watering places?

There is but little wood near here, except some small mezquite bushes and a species of dwarf live-oak, which answers very well for fuel. I also noticed yesterday a tree which is spoken of by a writer in California as being frequently seen there. It resembles the box-wood in some respects, growing in clusters or bunches, with a similar leaf, but appears to shed its bark (which is very thin and tough) annually. At this season, when the old bark is off, the stock and branches have more the appearance of the limbs of a person, both in color and texture, than of a tree, the exterior being a most beautiful flesh-color. It produces a fruit which is eaten by the Indians.

September 14.—Our course to-day has been north 83° east, down the left bank of the creek, crossing over a tract of poor soil covered in places with white decomposed gypsum. We touched the creek at but one place, until we arrived at our present camp. This is upon a high sandy bluff bordering the creek.

We found the stream at this point literally alive with a multitude of fish, and in a very short time we caught enough to supply the whole command. Among other kinds, we caught a white bass that I have never seen anywhere before, and found it very excellent.

From our last camp to where we struck the creek was $6\frac{3}{16}$ miles, and from there to this place $5\frac{3}{4}$ miles.

September 15.—We continued down the creek to-day in a course north 67° east for $9\frac{1}{2}$ miles, crossed and encamped on the south bank. We have passed over a country similar to that of yesterday, being poor soil, no timber, and covered with decomposed gypsum. The grama grass is very large and abundant along the valley of the stream, and affords excellent pasturage for our animals.

September 16.—Leaving the Delaware creek this morning, we struck out upon the prairie in a course south 64° 30′ east, and, after travelling nine miles, came in sight of the valley of the Rio Pecos. Our course led us down the stream six miles further, where we descended from the high lands into a sandy bottom, and encamped upon the river. The stream is here about thirty yards wide, very sinuous, rapid, and deep, with high clay banks. I understand that it receives a very considerable tributary some fifty miles above here, called the "Sacramento river," rising in the chain of mountains of that name; and this is said by the Mexicans to have upon its borders the most beautiful valley of lawns and woodlands of any streams known in New Mexico. They express their admiration of it by the word "linda," which, I believe, signifies super-excellent; yet, as it is in the heart of the Apache "range," it has never been settled.

Our Comanche guide informs me this evening that I cannot, as I desired, go directly from this point to the head of the Colorado or Brazos, as no man (not even an Indian) ever undertakes to cross the "Llano Estacado" opposite here. He states that it is eight days' travel from here to "Bosque Redondo," where the route from the "Joya de Cibaletta" crosses the Pecos, and about sixty miles to where the other route crosses near the southern terminus of the Llano Estacado. We are, therefore, obliged to follow down this stream until we find we can with safety turn east.

September 17.—We continued down the Pecos this morning for four and a half miles, where there is a rapid, with good rock bottom; and here we could have forded the stream, there being but three feet water in the channel. I, however, concluded, as the banks required some digging, to make a good passage for the wagons, that I would continue down the valley and search for a better crossing. After marching six miles further, we encamped again on the west bank of the river. Here we found the finest and most luxuriant grama grass we had seen, with mezquite wood. The water of the Pecos is slightly brackish, but we used it without inconvenience.

September 18.—Keeping down the right bank of the river, we found the valley covered in many places with a growth of small mezquite trees, and in these we saw for the first time since leaving the Rio Grande the white-tailed or common deer of the States. Our course was S. 68° 7′ E.; distance travelled 13⅛ miles. The soil in the river bottom has been clay, covered with a heavy grama grass, and the stream very crooked, with perpendicular banks from three to twenty feet high. Along its whole course the water is muddy, resembling the water of the Rio Grande. There is a total absence of anything like timber on its banks, and a stranger would not expect to find a water-course in approaching it until he was directly upon it, so much does it appear like other places upon the surrounding prairies. The course of the river runs so much nearer the direction I wish to travel than I had been led to believe from the maps of the country, that I shall continue down for some days further before turning east.

September 19.—Our road continued in the valley of the river, touching it occasionally, and cutting off the large bends, where it could be done, until we reached a high bank at 13¼ miles from our last camp; here we found good wood and grass, and encamped. The soil has been of a clayey nature to-day, but very soft and rich; no timber except small mezquite bushes, which answer very well for fuel. The road through the bottom where we have travelled to day will be muddy after heavy rains, but at such times travellers can keep back upon the high prairie ridge.

September 20.—Our course to-day was S. 81° E. for 15$\frac{3}{16}$ miles along the west bank of the river. We passed a small salt lake upon our road, which was very highly saline; with this exception, the features of the valley were similar to that part which we passed yesterday. As I have not been able to find another ford since leaving the rapids, I have concluded to endeavor to effect a crossing at this place to-morrow. The river from the rapids here is very rapid, deep, and narrow, with high vertical banks of soft clay.

September 21.—I was obliged to resort to one of those expedients which necessity often forces travellers in this wild country to put in practice; and that was, to invent and construct a substitute for a ferry-boat to transport our men and baggage across the river. This I did by taking one of our wagon beds and placing six empty barrels in it, lashing them down firmly with ropes, and tying one on each outside, opposite the centre. I then attached a long stout rope to each end of the bed, and placed it bottom up in the water; a man then swam the river with the end of a small cord in his mouth, and to the end of this was tied one of the ropes of the wagon, which he pulled across and made fast to a stake upon the opposite bank. Some men then took passage upon the inverted wagon boats, and the current carried it to other shore, the rope attached to the stake preventing it from going down the stream further than its length. The boat was then drawn back by men for another load, and in this manner we crossed our men and baggage in a short time. We could transport 2,000 pounds of freight at one load, perfectly dry. Our wagons were then lashed fast to the axles, with ropes tied to each end, when they were pushed into the river and hauled across. There were fifteen feet of water where we crossed. As the current ran rapidly and the banks were muddy and steep, I was fearful that our mules would not make the passage. I therefore tied a rope to the neck of each one and pulled them across.

September 22.—This morning we made a march of nine miles down near the left bank of the river in a direction N. 82° E., where we struck a narrow laguna, or lake, which we followed for about two miles, and encamped near the southern extremity. The soil has been a rich loam, and I have no doubt would prove very productive. There has been a chain of sand hills in sight to-day, running from north to south across our course, about twenty miles to the east of us, (upon the Llano Estacado,) in which our guide informs me that there is water, but that we are obliged to pass over a sandy road for some fifteen miles to get through them. I have, therefore, determined to remain at this place until I can send ahead and ascertain whether I cannot pass to the south of them.

September 23.—I sent out Lieutenant Sackett, with an escort of dragoons, this morning, to explore the country in the vicinity of the sand hills, and shall remain here until to-morrow evening, by which time I expect to learn the result of his explorations.

September 24.—After filling our water barrels, and giving our animals all they would drink, I made a start this evening at two o'clock, and travelled ten miles in a direction nearly perpendicular to the valley of the river. Shortly after we left the laguna, an express returned from Lieutenant Sackett, informing me that, after, making a thorough examination of the range of sand hills for about forty miles south of our course, he was of the opinion that there was no place within that distance where they could be crossed with wagons. The whole surface of the country in that direction seemed to be one continuous succession of white sand hills, from twenty to one hundred feet high, in which his horses sunk to their knees at almost every step, from which I infer that the route indicated by our guide is the only one in the vicinity where this formidable obstacle can be passed. I shall, therefore, take a direct course for the pass in the morning, and expect to reach the hills during the day.

September 25.—We reached the sand hills this afternoon, about two o'clock, over a good level road, except about four miles near here, which is sandy, making the distance from the Pecos twent-three miles and four-tenths. There is a great abundance of good water at several places in the sand hills, but it is necessary to drive animals to it, as it is half a mile from the road and wagons cannot pass nearer. There is a trail leading to the water from where the road strikes the hills. These hills, or mounds, present a most singular and anomalous feature in the geology of the prairies. They extend (so far as we have explored) at least fifty miles in nearly a north and south direction, and from five to ten miles east and west; they are white drift-sand thrown up with much uniformity into a multitude of conical hills, destitute of soil, trees, or herbage.

In following up the trail from our road into the midst of this ocean of sand, we suddenly came upon several large, deep pools of pure water—the very last place on earth where one would ever think of looking for it. We are told by our guide that water can always be found here in the dryest season, and, judging from the rushes and other water plants growing in the ponds, I have no doubt that such is the case.

September 26.—As we have a long march before us still, and as the road through the hills is sandy, I have concluded to double teams to-day, and send on one-half of the wagons to the last watering place, five miles from here, and take up the remainder to-morrow.

September 27.—We moved up to-day with the wagons that were left behind yesterday, and found the water at this place equally as good as at the other. Although there are but two particular points where trails lead from the road to water in the hills, yet it can be found almost anywhere between the two points by going about half a mile to the east of the road, among the highest hills.

September 28.—Eight miles of sandy road which we passed over to-day brought us out upon the hard prairie again. Thus the entire distance from where we first encountered the sand to this place is about seventeen miles; but only about one-half that distance is bad, and this not worse than some parts of the road upon the Rio Grande. There is good grass near the hills, and sufficient wood for fuel.

September 29.—Leaving the sand this morning, we pushed out upon the high plain of the Llano Estacado, not knowing whether we were to find water before we reached a luguna about sixty five miles distant. As our guide had passed over this portion of the road but once before, and then in a hurry, he was not very familiar with the localities. I therefore sent a party in advance to search for water, and felt some anxiety as to the result; I was relieved, however, about 11 o'clock, when a messenger returned with the cheering intelligence that the party had found a large pond of good water about sixteen miles from where we left this morning. This good news appeared to inspire our men and animals with renewed vigor. From the cheerless silence of the last two hours, the aspect of everything changed in a moment to humorous jokes and boisterous merriment. The whips were heard cracking from one end of the train to the other, and the mules appeared to move along with more ease than before.

From the sand hills our road followed an old Comanche trail until we turned to the left, two miles from our present camp. The track we make is plain, and travellers will have no difficulty in following it to the water. We are near two ponds in the prairie, where, judging from present appearances, there will always be water found, except in the dry season; the grass is good. Our course from the sand hills is N. 57° E., and the distance fifteen miles and three-tenths.

September 30.—In consequence of the hard work we have given our mules for the last four days, I "lay by" to-day to give them rest and grass, after the long journey of about fifteen hundred miles which they have made from Fort Smith; they require much care and attention, and it causes more delay than is agreeable; but there is no alternative.

October 1.—This has been a most fatiguing day to me, as I have been suffering for the last five days with an attack of dysentery; it has reduced me to such a weak state that I am obliged to be carried in a wagon in a lying posture, and every slight jar of the wagon sends the most acute pain through my whole system.

We marched seventeen miles in a course N. 67° E. over a firm high prairie, and are encamped near a pond on the plain. About half way between this place and our last camp, we discovered a small lake about one mile to the north of our road, where it is thought there will be water at all seasons; it is about three feet deep, covers several acres of ground, and has rushes growing in it. There are also numerous trails made by mustangs leading to it, showing that it is much frequented by them; and as the horse requires water every day, he would not probably stay at a place where it could not be found at all times. This lake I have called "Mustang pond;" and as it is situated about half-way between the sand hills and the laguna, (which is ahead of us,) I conceive it to be very important for travellers. Nine miles from our last camp, there is another large pond about half a mile to the right of the road, and I have driven a stake in the middle of the road opposite to it, with directions written upon it how to find the pond; this is a mile west of the Mustang pond. By keeping this in mind, and remembering that the trails in the vicinity all concentrate at the water, there will be no difficulty in finding it. As our road does not go directly to the pond, and as there is much sameness in the aspect of the prairies upon the Llano Estacado, persons might pass this place without finding the water, unless they follow the directions given above.

October 2.—We marched twenty-three miles to-day in a course N. 72° 22' E., which brought us to the Laguna, or Salt lake. The country has been similar to that of yesterday, over the high rolling table lands of the

Mésa, with no wood except the small mezquite brush. The water in the Laguna is brackish, but there is a small pond south of the road where we are encamped, which, although it is slightly sulphurous, is not unpalatable.

Should travellers come to this place, on their way to New Mexico, in an extremely dry season of the year, I would recommend them to carry from here in their wagons a supply of drinking water sufficient for two days, as this would last them until they reached the sand hills, if, by any accident, they did not discover the Mustang pond.

October 3.—Leaving the Salt lake this morning, our bearing was N. 71° E. for eight miles, where we reached the border of the high plain, and descended an easy slope of about fifty feet to a bench below; here we could see two low bluffs in the direction we were marching, near which our guide informed us we could find a fine spring of water. Fourteen and a half miles' travel over a beautiful road brought us to the spring, which we found flowing from a deep chasm in the limestone rocks into an immense reservoir of some fifty feet in depth.

This appears to have been a favorite place of resort for the Comanches, as there are remains of lodges in every direction; indeed, our Comanche guide tells me that he has often been here before, and that there was a battle fought here some years since between the Pawnees and Comanches, in which his brother was killed. He also informs me that there is a good wagon route from here to the Rio Pecos, striking it some seventy miles lower down than where we crossed, keeping entirely to the south of the Llano Estacado, and crossing the head branches of the Colorado.

There is a Comanche trail leading over this route, and it would, undoubtedly, be the best between this point and Chihuahua, as it is nearer than the one we have travelled, with no sand upon it and an abundance of water.

I think by taking the trail at this place and keeping the crest of the Llano Estacado on the right, one would have no difficulty in getting through to the plains at the Chihuahua crossing.

The mezquite trees are becoming larger as we descend from the high plain, and the soil better; several fossil shells of the muscle species were found here.

October 4.—We left the "Big Spring" to-day at one o'clock p. m., and travelled 12½ mile in course N. 43° E. to a spring in a beautiful timbered valley, with excellent grass. The spring is in the limestone rocks to the south of the road, and furnishes a good supply of water. It is a tributary of the Concho. We have passed over a rolling country to-day, covered with mezquite trees.

October 5.—Our course to-day was N. 47° 28′ E., over a rolling and rather broken country, of good soil, and covered on each side with large mezquite trees.

After marching 11½ miles we encamped in an extensive bottom or flat, through which there is good water standing in pools along the bed of the stream, and a great abundance of the finest mezquite grass. Manuel, our Comanche guide, leaves us at this place, and returns alone through a wild Indian country, some six hundred miles, to his home at San Miguel. He strikes directly across the "Llano Estacado" to "Bosque Redondo," on the Rio Pecos, over the route which has been spoken of before as passable for wagons. He expects to make the journey in fourteen days, and has no fear but what he shall reach home in safety. I have found him a man of much more than ordinary judgment and character; and should it ever become necessary to make an examination of the route from here to the Bosque Redondo, and thence to Joya de Cibaletta, I would have no hesitation in recommending him as the best guide that can be found in New Mexico.

October 6.—For about eleven miles after leaving camp this morning, our road passed over a perfectly flat prairie, covered with short buffalo grass, and through a continuous dog town almost the entire distance. We then struck into a creek bottom, crossed and followed down about three miles to its junction with a large stream, which is the main Red Fork of the Colorado, or, according to the Comanche nomenclature, the Pash-a-ho-no. We found this a stream of twenty yards in width, six inches deep, and running rapidly over a rocky bed; the water has a red tinge, and is slightly saline. The banks are bold and rocky, and I should imagine this to be the character of it to its source in the "Llano Estacado." This is the first tributary of the north branch of the Colorado that we have crossed. The main Rio Colorado has, near its head, two principal tributaries—the Concho and the Red Fork; all others are affluents of those two.

The country through which we are passing now is becoming much more interesting than it has been; there is some timber and streams of running water. Our camp is in a grove of mezquite and wild china trees upon the bank of a creek running into the Pash-a-ho-no.

We have seen wild turkeys upon this creek—the first since leaving the Rio Grande. Quails and meadow larks are common everywhere upon our route.

October 7.—Lieutenant Harrison started out after dinner to-day to examine a ravine two miles from here, and, as he has not returned, I think he must have wandered further than he intended, and has not been able to reach camp before dark. I have had our cannon fired, and if he is within twenty miles of us he will be likely to hear it, as the atmosphere is perfectly still and clear. Should he not return before to-morrow morning I shall send out parties to search for him; but, as he is a good woodsman, I am in hopes he will find his way to camp alone.

We remained in camp to rest our men and animals, intending to resume our march to-morrow.

October 8.—This has been a most melancholy day to us. As Mr. Harrison did not return during last night, I concluded that he might have become lost upon the prairies, and at daylight this morning I had another gun fired, in order that, if within hearing, he might take the direction and return to camp. I also sent out Lieutenant Updegraff and Beaver to take the track of his horse, follow it to the ravine, and, if possible, find out where he had gone; besides sending several parties of dragoons in different directions in search of him. In the course of two hours Lieutenant Updegraff returned, and stated that he had followed the track about one mile and a half beyond the ravine, where it appeared Lieutenant Harrison had been met by a party of Indians, and gone off with them in a southern direction. I immediately ordered Lieutenant Sackett to take all our mounted force, get upon the trail of the Indians, and follow them until he overtook them and recovered Lieutenant H.

Lieutenant Sackett followed the track about two miles from where he was met by the Indians, to a small branch of the Colorado, where, to his horror and astonishment, he suddenly came upon the murdered and mangled corpse of poor Lieutenant Harrison, lying down among the rocks, where they had thrown him, scalped, and stripped of all his clothing. The Indians had then struck out upon the prairie, and set off at full speed.

These facts having been reported to me, I despatched a wagon for the body, had it brought to our new camp, (three miles from that of last night,) and am preparing a box, in which I hope to take it to Fort Washita.

As it was late in the day before we got the corpse to camp, and as it was impossible to follow the trail after night, I directed Lieutenant Sackett to postpone his departure until early to-morrow morning. They have already had sufficient time to get a long distance from us, and, as our horses are mostly jaded and poor, I have not much expectation of his overtaking the murderers, unless they have gone to an encampment where there are women and children; but, from the course they have travelled, and their manner of encamping, Beaver thinks it probable that he may be able to form a very correct idea as to the part of the country they are making for, and perhaps tell to what tribe they belong.

There are several circumstances which have led me to believe that the act has been committed by a party of Kioways. There has been a large band of them lurking about the head of the Rio Concho during the whole summer, committing depredations upon the inhabitants of the State of Chihuahua; and it is but a short time since they stole several horses from an emigrating party from Louisiana upon this same stream.

The emigrants followed them, but, on overtaking them and not finding their animals, determined to keep them prisoners until they were returned. This resulted in an encounter, in which several of the Indians were killed, and among them their chief. Besides this, I heard of two other instances where Indians of this same tribe have committed depredations upon emigrants on the northern routes to New Mexico.

It has occurred to me that a remnant of the band upon the Concho may have been following us to get revenge for the loss of their chief. If so, they have taken most ample compensation; for a better young officer, or a more courteous, amiable, and refined gentleman, never lived. He was universally beloved by all who knew him: his kindness of heart and gentleness of disposition were remarked by every one.

When the melancholy news reached us that he had been murdered, there was such an expression of gloom cast over the command as I have never witnessed before. Old soldiers who had often seen their comrades falling by their sides in battle, and whose hearts, it might be supposed, were steeled against the manifestation of what some might consider weakness, were seen to turn away their faces to conceal their tears. They knew that in his death they lost a good friend.

October 9.—After starting Lieutenant Sackett, with all our mounted force, in pursuit of the murderers, I moved forward, this morning, over a fine rolling country of prairies and timber, with good soil, and in many places well watered. At eleven miles we passed a pond in which there will be good water at all seasons. At nine miles from this we struck the first affluent of the Brazos, (a tributary of Clear Fork,) running north. All the branches of the Colorado upon our route run south.

Our camp is upon the creek, where we have good grass and mezquite wood.

Lieutenant Sackett, with his command, returned about 10 o'clock this evening, and reports that he took the trail of the Indians, and followed it for a few miles, when he came to a spot where they had made a fire, cooked meat, and departed in great haste, after night, leaving a pair of new moccasins, a lariat, and a saddle, from which we infer that they did not know we were so near, were alarmed at hearing our gun, and left immediately. Their course from here was almost due north for fifteen miles, (the distance he followed them.)

Finding that some of his horses were failing, one giving out entirely, and the Indians far ahead upon fresh animals, he reluctantly abandoned the pursuit, and returned to camp.

Beaver pronounces the saddle and moccasins the same kind as those used by the Kioways; and, as their permanent abiding place is nearly opposite the Antelope buttes between the Canadian and Arkansas, the bearing of the trail would lead there. These are additional evidences of the correctness of my first suspicions.

It is well known, furthermore, that these Indians are a most deceitful and treacherous race: even the Comanches will not trust them. Lieutenant Harrison has always, in the goodness of his heart, had great confidence in the effect of kind and hospitable treatment towards the Indians, in order to secure their good will; and has often been heard to remark that, should he meet with a party of Indians when alone on the prairies, he would approach and greet them cordially. He was well armed and mounted; and it is thought that, if he had made the attempt, he might possibly have reached camp unharmed.

October 10.—Our road to-day passed over a very level plain, mostly covered with mezquite wood, until we reached this place. Our course has been N. 62° 28′ E.; and the distance travelled thirteen miles.

We are encamped upon the same stream that we left this morning, and have good water standing in large pools where our road crosses. About four hundred yards below, however, there are salt springs running into the creek, which renders it nauseous and unfit for use.

We passed over some gypsum rock to-day, near a small creek, and here we found the water bitter and unpalatable, as it has always been when we have met with that mineral.

October 11.—Leaving camp early this morning, we marched about two miles, when we struck a piece of sandy road three miles in extent; but we passed over it without difficulty, and had a most capital road from there to our camp.

There have been two low bald mountains in sight, about ten miles to the north, nearly all day, which are good landmarks. They are upon the head of the Double Mountain fork of the Brazos, and give it its name. We have been travelling through groves of mezquite timber, with a beautiful carpet of rich grama grass underneath, nearly all day.

There has not been so much water upon our road as usual to-day. We, however, passed one pond, where we obtained sufficient to water our animals. At our camp, we are upon the head of a creek which is slightly brackish, but is drinkable, and our animals appear to be more fond of it than of sweet water. We have seen several fresh Indian trails to-day, and they have been telegraphing with their signal-fires in several different directions. One was about twenty-five miles to the northeast of us, in the mountains opposite the main Brazos, and another in our rear. This is a method by which they communicate to each other intelligence of the approach of strangers, and various other facts known to themselves.

October 12.—Our course to-day has been north 55° east, and our road passing over a rolling prairie, with but little timber for the first seven miles, when we came upon the high banks of the Double Mountain fork of the Brazos, or "Tock-an-ho no," as the Comanches call it. Where we struck the stream it was fifty yards wide, twelve in depth, and very rapid, with a rocky bed at one place, but generally quicksand. We did not cross, but continued to the south, crossing a spring branch, and passing over as beautiful a country for eight miles as I ever beheld. It was a perfectly level grassy glade, and covered with a growth of large mezquite trees at uniform distances, standing with great regularity, and presenting more the appearance of an immense peach orchard than a wilderness. The grass was of the short buffalo variety, and as uniform and even as new mown meadow; and the soil equally as rich, and very similar to that in the Red river bottoms. This, together with the fact of its being well watered with small spring brooks, gives it all the requisites for making beautiful plantations that the most fastidious amateur in agriculture could desire. We encamped on a creek to the south of the road.

October 13.—It has been threatening rain for the last four days; and this morning, as we had everything in readiness for marching, it commenced, and continued all day, accompanied by a cold north wind. We made nine miles over a very beautiful country, covered with mezquite trees, and intersected with numerous small spring rivulets, tributaries of the Double Mountain fork of the Brazos.

We encamped on one of these, and had much difficulty in making a fire, as everything had been saturated with water. Our road has been heavy, and the cold "norther" has had an effect upon our animals which I did not anticipate; many of them failed before we reached camp, five gave out entirely, could not be got in, and died during the day. Three more have already died since we reached camp, and I very much fear, if the storm does not abate, we shall lose many more before morning. They are principally Mexican mules, raised in a warm climate, and could not (in the low state of flesh they are now in) stand cold rains.

October 14.—We have had during last night one of the most terrific storms I have ever witnessed in the whole course of my life. The wind blew a perfect tempest from the north, and it appeared as if the whole flood-gates of the heavens were suddenly opened, and the accumulated rains of a year poured out in torrents for fifteen consecutive hours upon us. The whole surface of the earth was deluged; even upon the tops of the hills there were three inches of water, and it filled every ravine and hole about us. The creek upon which we are encamped had but very little water in it last night: it is now full to the top of its banks, and would float a steamboat.

Our poor mules have suffered severely from the effects of the storm, and twenty-five have perished. I trust, however, that the violence of the storm has passed, and that we shall be enabled, with care, to preserve the remainder. I have had several of our wagon covers cut up, and made blankets to cover the weakest of them. We cannot move from here until the creeks run down, and our animals recover some strength, as at present many of them are but barely able to walk.

We have now remaining twenty days' rations, which would have been more than sufficient to serve us to Fort Washita; but the storm has placed me in a situation which could not have been anticipated, and I have reduced the allowance of flour one third, to provide against any further contingencies.

Previous to the storm, we were moving along finely at the rate of about sixteen miles per day, and our mules were doing as well as could be expected; but the loss of thirty-three in one night has placed a very serious obstacle upon our movements, and I am obliged to leave a part of our wagons, reduce the amount of our baggage as much as possible, and endeavor to get on with what we cannot dispense with, after the ground becomes a little settled.

I have felt the most lively anxiety for our mules from the commencement of the journey, knowing that our progress depended entirely upon them, and have therefore required the teamsters to pay the most unremitting attention to them; but it appears that they cannot endure one of these bleak northers upon the prairies.

Our oxen did not suffer in the least from the storm, and some of them belonging to our sutler, that were very lean when we left Dona Ana, and have hauled very heavy loads the entire journey around from Fort Smith, have been improving for the last month, while our mules, with lighter work, have been falling off. I am decidedly of the opinion, after the experience I have had with different kinds of cattle, that oxen make better teams for prairie travelling than either mules or horses. In the very warmest weather of summer, over sandy roads where there is but little water, mules are preferable, but under any other circumstances I should prefer oxen. They will travel from 20 to 25 miles from day to day over good roads with perfect ease; and there is no danger of their being stolen by the Indians. In hot weather they should be driven morning and evening, and allowed to stop during the middle of the day.

October 15.—We remained in camp to-day awaiting the termination of the storm, and giving our animals time to recover a little from the effects of it. As we lost no more last night, we hope to be able to preserve those that we have left. The cold wind continues to blow from the north, with intervals of rain, but I think the storm is nearly over; and as soon as the creeks (which are now swimming) run down, I shall endeavor to go on. I reduced the flour part of the ration one third yesterday, and as the men see the necessity of it, they submit to it cheerfully. Indeed, they have upon all occasions performed their arduous duties with the utmost alacrity and good will, and upon the whole of our long march of some seventeen hundred miles I have seldom had occasion to reprove one of them.

October 16.—This has been a day of general drying, and clearing our wagons of all articles that could conveniently be dispensed with upon our march. I have taken five of our oldest wagons to pieces, and placed them in a low place near the creek on the south side of the road. I have also had other surplus articles boxed up and buried about fifty yards from the road, and a large fire made over the spot, with directions written upon a tree to the right where these articles may be found.

The storm has passed, and we have a bright, warm day, with a south wind. If this continues I shall move ahead to-morrow to the next creek, about four miles from here.

October 17.—We made a start this morning, and marched four miles to another small creek, which we found too high to cross, and encamped upon the west bank. This creek unites with the one we left this morning, and runs into the Clear Fork of the "Brazos."

The country continues of the same character as before, gently undulating, smooth, and well situated for farms. We pass from one creek to another every three or four miles over high and dry mezquite openings, which slope very gently towards the creek bottoms on each side, and the soil cannot be surpassed. There is no part of it that cannot be made available for cultivation. We find upon this creek mulberry, elm, hackberry, wild china, and oak.

October 18.—We crossed the creek this morning, and after travelling two miles in an east course, struck another, which we found still too high to cross, and were obliged to encamp on the west side to await the fall of the water. We have seen signal-fires at several points to-day, showing that Indians are about us.

October 19.—Last night was one of the coldest I have ever known at this season of the year. About dark the wind turned to the north, bringing clouds and rain, and this morning the surface of the ground is covered with snow. Our mules fortunately found cover in the timber on the creek, and did not suffer so much as we were fearful they would. Much to our surprise and delight we found the creek had fallen six feet during the night, and was now fordable. We crossed after digging down the banks, and marched four and a half miles in a course 1° 30′ south of east, when we reached another creek tributary to the "Qua qua ho no," or Clear Fork of Brazos; we crossed it, and encamped on the east bank. There are several kinds of hard timber upon this creek, with fine grass. All these small streams have buffalo, cat, and several other kinds of fish in them. We have seen fresh Indian signs to day, but as yet none have shown themselves.

October 20.—We travelled to-day over a very beautiful succession of ridges and valleys between clear running brooks, skirted with a variety of different kinds of timber for ten miles, in a direction N. 70° 20′ E., when we came to the hills which border the valley of the Qua qua ho no, a branch of the Clear Fork of Brazos.

I was about three miles in advance of the train, with Beaver and three others, when we discovered five Indians coming towards us, driving pack horses. As soon as they saw us they changed their course, and appeared afraid to come near. I sent Beaver out alone to meet them, and to invite them to approach. Instead of going directly where they were, he went to an eminence to the right, where they could see him distinctly, and beckoned to them with his left hand to come to him, at the same time placing his right hand in token of friendship. After repeating this pantomime several times, with great formality and precision, one of the Indians galloped towards him until he reached within two hundred yards, when he halted and went through the same gestures as Beaver had done; after this they approached and embraced, when questions were asked by each as to who the other was, where they were going, &c., &c. They were a party of Comanches, and stated that their village was but a short distance off on the bank of the "Qua-qua-ho-no." After remaining but a few minutes with us, they rode off again at full speed towards their camp, and in a short time parties were seen coming towards us from all directions. As our train had reached us I made a halt, and we soon had several hundred men, women, and children around us. I permitted them to approach, as I knew they would commit no depradations while their families were with them.

They had been with us but a short time, when we saw another large party approaching, which Beaver instantly pronounced to be his friends the Kickapoos—and this proved correct. They numbered one hundred warriors—fine, dashing looking young fellows—all well mounted, and armed with good rifles, upon some of which we saw the familiar names of "Darranger" and "Tryon," "Philadelphia, makers." They had their families with them, and were going to pass the winter in hunting upon the Colorado, where they expected to find game abundant. They had a very large number of horses and mules, to transport their provisions and baggage, and were in every respect well fitted out for their hunt. The name of their chief was "Pa-pe-qua na," a good looking old man, who said he had always been a friend to the whites.

Among the Comanches were several chiefs and captains; who, after the usual prelude of expressing their entire devotion to the American people, showed me letters from various persons who had passed through their country, requesting the whites to treat the bearers kindly. Among them I remember the names Se na co, Pe a te-quash, and Was-se-na ha. Se-na-co was a dignified, fine-looking old man, and showed me numerous testimonials of his friendship and good will towards the whites. Among others, he had letters from Major Neighbors, the Comanche agent, Colonel Montgomery and Major Gates, of the army, all giving him a good character. He kept these with great care, and appeared to regard them as of much importance. He is principal "war chief" of the southern Comanches, and appears to be sincere in his professions of friendship for us.

While the Kickapoos remained with us, I inquired of them if they had heard anything said among the Comanches relative to the murder of Lieutenant Harrison. They had not, but were of the opinion that the act was committed by the Kioways; and the chief promised to make diligent search among all the Indians he met, for the horse and other articles that were taken at the time. These were minutely described to him, and he felt confident he should be able to learn everything connected with it before his return home to the Creek nation, in the spring, and promised to report his discoveries to the commanding officer at Fort Washita.

These Indians are brave warriors, good shots, and prepared to meet any of the prairie tribes, either in peace or war. They carry out goods on their hunts, which they exchange for mules, and drive them to the settlements in the spring; thus they form a commercial communicating medium between the white traders and the wild Indians, and drive a profitable trade, while they indulge in their favorite amusement, the chase.

After I had made the chiefs a present of some tobacco, I invited Se na-co and his suite, eight in all, to our camp for the night. He appeared much gratified with his reception, and, when he parted from us, shook me warmly by the hand, saying that "he was not a Comanche, but an American;" and, as I could not be outdone in politeness by a wild Indian, I returned the compliment by telling him that I was soul and body a Comanche, and that there was not a drop of Anglo-Saxon blood in my veins; all of which was no doubt duly understood and appreciated.

The Qua qua-ho-no, upon which we are encamped, unites with the Clear Fork of the Brazos about two miles below here. It is forty yards wide, two feet deep, and runs rapidly over a gravelly bottom. It is shut in on both sides by ranges of hills about two hundred feet high, between which the creek flows through a most beautiful and picturesque valley two miles wide, of fine rich soil, intersected at every few hundred yards by rapid spring rivulets, affluents of the main stream. This is and has been for many years a favorite place of resort for the Comanches.

The valley being covered with several kinds of grass that remains green during the winter, they come here in autumn, graze and fatten their horses, and are ready for the buffalo on their winter migration to this region. We found the first pecan timber here that we have seen since we left the Creek nation.

October 21.—We crossed the creek this morning and passed out of the valley of the Qua-qua-ho-no through a ravine which winds by a very gentle and almost imperceptible grade to the top of the plain, crossing several small branches before we reached our present camp, seven miles from the last.

We are upon a clear spring branch fifteen feet wide, abounding with fish. Our poor mules are so much reduced that I am obliged to husband their strength with great care in order to get along at all. I therefore make short marches, to give them ample time to rest and eat. The mezquite wood and grass continue very abundant, and we occasionally see the grama grass.

The principal rocks for the last four days have been sandstone of different kinds, some dark and highly impregnated with iron, and having the appearance of volcanic productions; others in very thin slabs or plates and of an exceedingly fine texture, the fracture resembling that of a bone. I observed this evening a variety of the thistle which is new to me; it has a stock of about three feet in height, with a most gorgeous and beautiful blossom of a deep royal purple color. It has something the shape and appearance of the passion flower.

October 22.—At three miles from our last camp we crossed a large spring branch twenty feet wide, which runs into the Clear Fork of Brazos. Our road from there was over a smooth, undulating country, abounding with small streams and covered with mezquite timber; after travelling nine miles and three-fourths, we encamped upon another small tributary of the Clear Fork of Brazos. The weather begins to be warm and clear, and our mules are improving.

October 23.—Our course to day has been N. 68° 8' E., over beautiful fertile ridges and valleys, covered with live-oak, post-oak, and mezquite timber for nine miles, when we struck a rapid stream of clear water about twenty feet wide and eight inches in depth, with high banks skirted with a variety of large timber, such as live oak, wild china, elm, hackberry, and cotton-wood. The valley, which is a mile wide, has a most luxuriant grass and other vegetation, indicating the best quality of soil. There are bluffs about fifty feet high bordering the valley, and these are covered with groves of post-oak. The stream runs to the east of the Clear Fork into the main Brazos. About thirty miles north of our camp there is a sharp mound visible from the hills about here, and Beaver tells me that directly at the foot of this mound runs the Big Witchita, one of the principal tributaries to Red river, and that thirty miles in a northwest course from that mound the Red river forks: one branch, coming in from the west, is called Ke-che-a qua-ho-no, or "Prairie-dog Town river," from the circumstance of there being a round mound upon the stream which has a prairie dog town on the top of it. This branch rises in the Llano Estacado. The other or northern branch is the principal stream, which rises in the Salt plains near the head of Dry river.

October 24.—After marching 6 7-10th miles this morning, we came upon the bluffs which border the valley of the main branch of the Rio Brazos; we descended about fifty feet by an easy slope into the valley and struck the river at a place where it was fordable. It was a much larger stream than I had anticipated, being 200 yards from bank to bank, with a current of about four miles an hour, and three feet deep in the channel at this time, (when the water is at a medium stage.) Judging from the "drift," it does not appear to be subject to a rise of more than five feet above its present depth, and does not overflow its banks. The bed is red sand, which becomes soft quicksand during a rise or fall, and is then difficult to ford. It was falling rapidly when we reached it, and we were obliged to take off our mules, drive them across, and pull over the wagons with ropes, the men taking the water for each wagon. This stream rises in the salt plains of the Llano Estancado, some hundred and fifty miles west of here, and I am told runs through a rough, broken country for a great portion of the distance; indeed the mountains along its borders were frequently pointed out to me by our guide along our route west of here. The water is brackish and unfit for use; there are, however, small streams running into the river so frequently that fresh water can be found at almost every place where it is required. The valley of the Brazos is (where we crossed) three miles wide, elevated about eight feet above the water in the river, and skirted on each side with a range of hills, from fifty to two hundred feet high, covered with timber. The soil in the valley upon the west side is rather sandy, but on the east side it is good. The adjacent country upon both sides is very fertile. Should our government at any future time decide upon establishing a military post as far west of the frontier settlements of Texas as this, I am of the opinion that near this place would be the best that could be selected, for the following reasons: The Rio Brazos runs through a country much frequented by all southern prairie tribes of Indians east of the Pecos. Upon the south and west side range that numerous and powerful tribe the Comanches; also the Kioways, Lepans, and Tonkeways. Upon the north and east side are found the Witchitas, Caddos, Wacos, and those other small tribes which inhabit the country between the Washita and Red river. The Brazos forms the boundary between the Comanches and the tribes living east of it, and the latter are not suffered by the Comanches to hunt upon the west side of this river. A military post established here would therefore be in close proximity to all of these tribes, and would unquestionably have the effect in a great measure to put a stop to the depredations which they commit upon the frontier settlements of Texas. From all I can learn, there is a very superior tract of country between here and the extreme western settlements in Texas. This would be occupied in a short time, if farmers could have the protection which a garrison at this place would afford. As this is nearly on a continuation of the line dividing the waters of Red river from those that run south into the Brazos, Trinity, and Sabine, and as the geography of the country would point out this ridge as being the most favorable location for a road, it would strike the Brazos at this place. There is oak building-timber and stone in abundance in this vicinity. The grass remains green during the entire winter, and animals thrive and fatten without any other food. The climate is mild and salubrious, the atmosphere dry and pure, and cannot prove otherwise than healthy. These, with other local advantages, such as pure water, rich soil, good fuel, &c., make this the most favorable point for a military post I have seen. We encamped to-night upon a small branch running through the Brazos valley, about two miles east of where we crossed.

October 25.—We passed up a ravine by a very gradual and easy ascent to the plain on the east side of the Brazos, and taking a course N. 65° 50′ E., travelled over rolling mezquite and post-oak openings, with occasional prairies, for twelve and a half miles, where we encamped on a small affluent of the Brazos.

The soil on this side of the river is different from that on the west side, being a mixture of reddish clay and sandy loam; it is, however, equally as fertile, and produces a luxuriant vegetation. We have passed several ledges of dark hard sandstone to-day, which would make good building material.

October 26.—Leaving the creek this morning, we passed up through a grove of heavy post oak and black-jack (the latter a species of oak) of about four miles in width. This is upon a ridge which divides the Brazos from the west fork of the Trinity river. Continuing on in a direction north 45° 28′ east, over smooth ground, we made 13$\frac{1}{10}$ miles, and encamed on a small running stream (ten feet wide) which our guide calls the head of the main west fork of Trinity. It is fringed with a narrow strip of large oaks and other hard timber, suitable for buildings and rails, and flows through a valley about a mile in width, of good soil, (a rich sandy loam,) which is in every respect well adapted for farming.

There is grass in this valley which grows to the height of six or eight feet, with a round jointed stock, and a head upon the top filled with seed which our animals eat eagerly, and I think must be very nutritious.

The timber increases in size and quantity as we advance. We are now passing through groves of oak, and do not find so much mezquite timber as we did on the other side of the Brazos. The grass has also changed from the grama to the mezquite variety. Upon the last hundred miles of our route we have seen but little game, as we have been in the vicinity of Indians who are constantly hunting and drive it off; but now we are coming where the Indians seldom hunt, and the game is more abundant. Two deer and three turkeys were brought into camp this evening, and we have seen the first grouse to-day since leaving the vicinity of Chouteau's trading-house, on the Canadian. These birds appear to stay near the settlements, as we have seen none upon our whole march at any other place.

October 27.—We passed out of the valley this morning; and, after travelling three miles, struck upon the ridge dividing the Red river from the Trinity. Here we found a fine smooth road, and travelled 14½ miles in a direction north 65° 15′ east, encamping upon a small branch of the west fork of the Trinity.

The road upon the "Divide" crosses the heads of numerous creeks, running into the Trinity on the south and the Little Witchita on the north, and upon nearly all of them there is a great abundance of timber and good soils. Between the tributaries of the Trinity (which occur every two or three miles) there are ridges of rolling prairie, covered with luxuriant grass. The western border of the Upper Cross Timbers has been in sight to the south all day.

October 28.—Our road has continued near the crest of the Divide all day, sometimes crossing the head of an affluent of the Little Witchita, and at others a branch of the Trinity. Our average course has been north 74° 32′ east, and we travelled 13$\frac{1}{10}$ miles. We are encamped in a rich bottom between two small spring brooks, and have fine grass and wood.

We passed through a dense grove of oak to-day of four miles in width, and have seen many more on both sides of our road.

When we arrived, we found there had been a large number of Indians encamped here about five days since, and Beaver, with his usual sagacity, immediately pronounced it at Kickapoo camp. Having a curiosity to learn how he arrived at this conclusion, I asked him what he had seen to indicate that this was an encampment of that particular tribe? This led to a conversation, in which he instructed me how, on seeing an old Indian camp, to determine at once what particular tribe had occupied it.

The Comanches make their lodges by placing poles on the ground in a circle, and tying the tops together, thus forming a frame-work of a conical shape, which they cover with buffalo hides.

The Witchitas makes their lodges in the same manner, but do not unite the poles at the top, leaving an opening at the top for the smoke to pass out. This, when covered, forms the frustrum of a cone.

The Kickapoos place the poles in a circle like the Comanches; but, instead of bringing them to a point at the top, they bend them so as to unite in an arch with those of the opposite side: the lodge is thus round upon the top.

The Delawares and Shawnees carry tents, and leave the poles standing wherever they encamp.

The Cherokees have tents also, but make their fires different from the Delawares: they place the wood in the fire with the sticks parallel, and burn from one end, pushing it into the fire as it burns away; whereas the others place each stick pointing to the centre of the fire, like the spokes of a wheel.

These facts, although simple and apparently of little importance in themselves, might be of great service to a traveller upon the prairies, as it would enable him, should he find a camp that had been recently deserted, to tell whether it had been occupied by friendly or hostile Indians;

and, if they should be enemies, by observing the trail they had made on leaving, he would know what direction to take to avoid them.

October 29.—Our road continued upon the Divine in a course N. 82° E., until we encamped upon a small creek running into Red river, twelve and a half miles from our last camp. Our present position is nearly due south from the junction of the Little Witchita with Red river. We have been passing near the borders of the "Upper Cross Timbers" all day, and gradually approaching them until we are within a mile. We have seen but little mezquite timber to-day, and the mezquite and grama grasses have almost entirely disappeared; but we find the other kinds of prairie grass in abundance.

October 30.—We entered the "Cross Timbers" this morning, and passed on the north side of the "Divide," crossing the heads of the Red river affluents every mile or two to our camp. We are upon a clear creek, about fifteen feet wide, running rapidly towards Red river through a beautiful bottom of prairie and timber interspersed. The "Cross Timbers" have thus far been principally post oak and black-jack, with many small glades or prairies through them, and abundantly watered with clear streams. A mile from our last camp we struck a fresh wagon trail which followed the Divide, and was upon our course; we have therefore continued in it. This is the first indication of civilization that we have seen upon our route since we left Dona Ana, and it looks as if we were approaching near the settlement. Game is becoming more abundant as we advance east. Beaver and myself have seen several fresh bear tracks to-day, and each killed a deer; we have as yet, however, seen no bears.

October 31.—We passed through the "Upper Cross Timbers" to-day and encamped upon an affluent of the Trinity, eleven miles from our last camp. We found the Divide somewhat circuitous, but were obliged to follow it in consequence of the numerous creeks running off on each side. The soil through the Timbers is more sandy than it has been further west, but there are many small glades where the soil is good and well adapted to agriculture. The formation is (upon the Trinity waters) principally limestone. The game continues abundant, and Beaver and myself have each killed another deer to-day. Our camp is on the prairie, about two miles from the Timbers, to the south of the road.

November 1.—Still keeping the Divide, we marched thirteen miles and three-quarters to-day, and encamped to the right of the road upon a branch of the Middle or Elm fork of the Trinity. After we had travelled four miles this morning, we found that the wagon we had been following for several days turned down off the Divide towards the settlements on the west side of Elm fork; but as this course was too much south for us, I kept the high prairie Divide, and two miles from our camp it approached in sight of and very near the valley of Red river.

November 2.—Our road along the Divide has been of a similar character to-day that of yesterday, and runs nearly parallel to the Elm fork, until it comes opposite Fitzhugh's Station; here it bears more to the east. The extreme frontier settlement is upon the creek opposite our camp. It is a most charming stream, about forty yards wide, and one foot deep, of pure spring water, and a great abundance, of the best timber of various descriptions upon its banks, such as white oak, bur oak, hickory ash, pecan, &c. Outside of the Timber upon the creek the prairie is rich and produces abundant crops. I think it one of the most beautiful locations for farmers that can be found; and as the productiveness of the land has been thoroughly tested, there can be doubt on that score. It is very thinly settled at present, but offers great inducements for others to come. Our position is seven miles and two-tenths from our last camp.

November 3.—We marched sixteen miles to-day upon the Divide, and encamped upon a tributary of the "Elm Fork," in the "Lower Cross Timbers."

November 4.—We continued upon the dividing ridge through the "Lower Cross Timbers" to day, until we intersected a road from Fitzhugh's Station; here we reluctantly left this splendid natural road which we have travelled on from the Brazos, and turned to the left towards Preston, where I determined to cross Red river. After making our day's march, (twelve and a half miles,) I encamped near a plantation, owned by Mr. McCarty, upon the head of the "Big Sandy," an affluent of Red river.

November 5.—We continued on the Preston road for twelve miles and three-fifths, encamping at a small branch of Red river. On the 6th of November we reached Preston, crossed the river in a flat-boat, and encamped in the Chickasaw nation, eight miles from our last camp. On the 7th, after travelling seventeen miles and three-tenths in a direction N. 3° 20′ E., we reached Fort Washita; here we remained until the 10th of November. I then ordered the portion of the escort belonging to the Fort Towson command (thirty-seven men) to proceed direct to that post, while Lieutenant Sackett, with the remainder of the escort, was directed to proceed with the train to Fort Smith, intersecting our outward road at the crossing of Gaines's creek, on the south fork of the Canadian.

As we had succeeded in bringing the corpse of Lieutenant Harrison without inconvenience, it was considered desirable that it should be taken on to Fort Smith. I therefore gave directions accordingly, and proceeded in advance of the train to report in person to the general commanding the 7th military department. The road from Fort Washita to Fort Smith was surveyed and measured, in the same manner and with the same instruments as the other part of our road, under the supervision of Lieutenant Sackett, and the bearings and distances from day to day accurately plotted upon the accompanying map. The command with the train left Fort Washita on the 10th of November; arrived at the south fork of the Canadian on the 15th; left here on the morning of the 16th, and reached Fort Smith on the 20th November. The distance from Fort Washita to the south fork of the Canadian is eighty-one miles, and from thence to Fort Smith seventy-six miles. The distance from Dona Ana to Fort Smith, according to our measurement, is 894 miles—only about eighty miles greater than the distance to Santa Fe on our outward route. By a glance at the map it will be seen that our road at a point near the Brazos passes to the south of a direct line to Fort Smith, and at Preston turns to the north again, forming an angle of about 50°. Our guide is of opinion that a good wagon road can be found from the Brazos in very nearly a direct line to Fort Smith, leaving Preston and Fort Washita to the right, and intersecting the Canadian route near the Delaware mountain. If such is the case, it would shorten the road some thirty or forty miles; but as I am obliged to pass Fort Washita to get supplies, I could not examine that route.

The entire distance that the escort has marched since it left Fort Smith is 2,023 miles. The command has generally been very healthy, and no deaths among the enlisted men. With the exception of one man left sick, and three desertions in New Mexico, the strength is the same as when placed under my command.

I shall now close my report with a few general remarks in reference to the country we have passed over, the relative merits of the two routes, and the probability of finding other better lines of communication between the Mississippi river, New Mexico, and California.

In the first place, I beg leave to remark, that before leaving Fort Smith for Santa Fe I had been led into very erroneous notions in regard to the geography of the country lying between the Rio Grande and the heads of the rivers running into the United States and Gulf of Mexico. From the best maps I could find, I was induced to believe that there were extensive ranges of lofty mountains running across the route from El Paso to Fort Smith, which could not be avoided, and that there were large streams in some places, where upon examination none are found; that in other places there were no streams, where indeed there are many. For instance, upon many of the modern and most approved maps, the Rio Pecos, or, as it is improperly termed by some, the Rio Puerco, is laid down as running from north to south nearly parallel to the Rio del Norte, and at a distance of about forty or fifty miles from it, when its course for nearly a hundred miles that we have followed it is but about 25° south of east; and instead of being fifty miles from the Rio del Norte, it is two hundred and four in nearly a direct line. This opinion has been so general, that several parties of emigrants on their way to New Mexico left the Rio Pecos in the morning, expecting to reach the Rio Grande the same night; and some of them falling into a route where there was no water, travelled several days in a westerly direction, suffering greatly, and in some instances perishing before they reached the river. The inhabitants at El Paso in one instance sent out water to the relief of emigrants who were too much exhausted to get it, and who would otherwise have probably died upon the plains.

Disturnell's map of Mexico, &c., upon which the boundary between the United States and Mexico is by the treaty defined, is one of the most inaccurate of all those I have seen, so far as relates to the country over which I have passed. He makes a greater error than most others in laying down the Pecos, and has the Colorado, Brazos, and Red river all inaccurately placed. Upon the Red river he has a very large branch coming from far west, near El Paso, which he calls "Ensenado Choctaw." This is altogether an imaginary stream, as no one who has been in the country ever heard of it; neither does any branch of Red River extend to within three hundred miles of the Rio del Norte. There are but three principal tributaries to Red river above Fort Washita; these are the Big and the Little Witchita and the Ke-che-a-qua-ho-no, but neither flows far from towards El Paso. These, with the main branch of Red river and the Brazos, all have their sources in extensive salt plains far east of the Rio Pecos. Their waters are strongly saline and unpalatable, and for a long distance run through a country poorly watered, and bordered by rugged cliffs and deep ravines. Hence it appears to me impracticable to find a road to the Rio Grande which shall follow up the course of either of these streams. Even if the road could be made to the head of one of them, it would terminate at the eastern border of the Llano Estacado; for no man, as I have remarked before, attempts to cross that desert, except at certain points.

It therefore appears to me, that if a route could be found in nearly a direct line from a desirable point in the United States, which would skirt the border of the plain, and at the same time have sufficient water and wood upon it at all seasons of the year for the traveller's use, that would be the best location for a road, as, in this case, the road would cross the head branches of streams where there would be an abundance of water, and no heavy hills or large rivers to pass. Fortunately, on our return from New Mexico we fell into a route of this description, and had no difficulty in finding an abundant supply of wood, water, and grass upon nearly the whole route.

On leaving the valley of the Rio del Norte, our road passed through a gap or pass in the first chain of mountains in a direction which would have taken me near Fort Smith, but I was obliged here to change our course to avoid the Sacramento chain of mountains lying across our route, as our guide told me there was no practicable pass for wagons through there. I therefore bore south, and crossed the level plain dividing the two ranges to the "Sierra Waco." Our road thus far is but little more elevated than the table lands adjacent to the valley of the Rio Grande. From this point we ascended about two hundred feet through a sinuous valley or cañon of gentle grade to the second bench, at the southern extremity of the Sierra Alto. We then crossed another extensive plain of about eighty miles in width, which brought us to the Sierra Guadalupe: here we encountered the margin of another high plain, which forms the third and highest bench between the Rio Grande and the Rio Pecos, the difference between the summit level at this point and Dona Ana not being over five hundred feet. From this chain of mountains the road descends to the valley of the Pecos, about two hundred feet. Thus, from the Rio Grande to the Pecos, a distance of two hundred and four miles, there are but three hills of any magnitude to ascend in coming east, and those with a little expense could be made as good as any road in our country. From the valley of the Pecos to the sand hills the road ascends probably two hundred feet, but the slope is so uniform that it is hardly perceptible. These hills are near the southern extremity of the great desert of the Llano Estacado, and stand upon the summit of the plain dividing the waters of the Rio Pecos from those that run east and south into the United States.

Our road from here runs across the "Llano Estacado" for seventy-eight miles upon a perfectly level prairie as firm and smooth as marble. It then descends from the high table land about fifty feet into a rolling prairie country, where the Colorado of Texas has its source. Thus far there is but little timber or water upon our route, except at certain points noted upon the map; but these points can be made from day to day with loaded teams. As if, however, in compensation for the absence of other favors, nature, in her wise economy, has adorned the entire face of the country with a luxuriant verdure of different kinds of grama grass, affording the most nutritious sustenance for animals, and rendering it one of the best countries for grazing large flocks and herds that can be conceived of.

Immediately after we descended from the high table lands, we struck upon an entirely different country from the one we had been passing over before. By a reference to the map it will be seen that we kept near the plain upon the head branches of the Colorado and the Clear Fork of the Brazos. Here we found a smooth road over a gently undulating country of prairies and timber, and abounding with numerous clear spring branches for two hundred miles, and in many places covered with large groves of mezquite timber, which makes the very best of fuel. The soil cannot be surpassed for fertility. The grass remains green during the entire winter, and the climate is salubrious and healthy; indeed, it possesses all the requisites that can be desired for making a fine agricultural country, and I venture to predict that at no very distant period it will contain a very dense population. It is only necessary for our practical farmers to see it, and have protection from the incursions of the Indians, to settle it at once.

Soon after crossing the Rio Brazos, our road strikes out upon the high ridge lying between the waters of the Trinity and Red river; and it appears as if nature had formed this expressly for a road, as it runs for a hundred miles through a country which is frequently much broken up upon each side with hills and deep ravines; and the only place where wagons can pass is directly upon the crest of this natural defile. It is as firm and smooth as a turnpike, with no streams of magnitude or other obstructions through the entire distance to near Preston, where we left it and crossed Red river. From Preston to Fort Washita, and thence to our outward route upon Gaines's creek, the road passes through the Chickasaw country, which is rolling, and in many places covered with a great variety of large timber, and well watered, with no mountains or high hills to pass over. Hence you will perceive that from Dona Ana to Fort Smith, a distance of 994 miles, our road passes over smooth and very uniformly level ground, crossing no mountains or deep valleys, and for five hundred miles upon the eastern extremity runs through the heart of a country possessing great natural advantages. I conceive this to be decidedly the best overland wagon route to California for several reasons, among which are the following:

1. I was assured by several of the best guides in New Mexico—among others Messrs. Lereux, Kit Carson, Hatcher, and Thomas—that there was no point upon the Rio Grande north of San Diego from which wagons could pass through the extensive ranges of mountains lying west of that river, and that it would be necessary to take Colonel Cook's route to the head of the Gila. Should emigrants go to Santa Fe, therefore, they have to travel three hundred miles down the river to reach this point, whereas our return route leaves this road almost directly at the placer.

2. The roads from Fort Smith and Independence to Santa Fe being over eight hundred miles, and the distance down the Rio Grande three hundred more over a very sandy road, makes these routes longer than the southern route from Fort Smith by two hundred miles.

3. As there is grass upon this route at all seasons of the year, it can be travelled at any time. It is true that the old grama grass dries up early in the spring, but appears to cure like hay, and does not lose its nutritious properties.

4. As San Diego on the Rio Grande, the mouth of the Gila river, and San Diego on the Pacific, are all very nearly upon the same parallel of latitude, (32° 45′ 54″,) our southern route would form a direct line of communication with Cooke's road from the United States through to the Pacific, and probably shorter by several hundred miles than any other.

There is a difference of thirteen degrees longitude between Fort Smith and Dona Ana, and ten degrees difference between Dona Ana and San Diego, in California. The probable distance, therefore, from Fort Smith through to the Pacific would not be more than about seventeen hundred miles. Emigrants with good cattle, and well supplied with the proper "outfit" for the journey, should go through in four months with ease.

As I have remarked before, I consider oxen to be the best description of cattle for the prairies; and emigrants, before leaving for California, should provide themselves with one or two extra pairs to be ready to supply the places of any which may fail or die upon the road. They should take light, strong wagons, and transport nothing but provisions and such other articles as are absolutely required upon the journey. Their provisions should be secured in small packages, and not suffered to become wet. Each wagon should have a double cover, a water-cask, and extra axle-pole and pair of hounds, before going out into the plains, as after this no timber is to be found suitable for such purposes. They should form parties or companies of from seventy-five to a hundred men each, which would be sufficient for protection, guarding animals, &c. While travelling through the Indian country they should herd their animals, night and day, with the utmost vigilance and care, and never allow them to move from camp without an armed guard.

The best season for emigrants to leave the United States for California, upon the southern road, is about the first of June. There would then be good grass and water to the Rio Grande, and they would reach there about the last of July. This would give them time to stop two or three weeks to graze and recruit their animals, and lay in additional supplies, should they require any, for the remainder of their journey. Flour, corn, vegetables, and beef cattle, as also many articles of merchandise that travellers require—such as clothing, shoes, &c.—can be obtained for moderate prices at Dona Ana or El Paso.

Leaving the Rio Grande about the 1st of August, they would reach the Colorado of California after the annual flood, which occurs in July and August, overflows the banks for several miles on each side, and renders it utterly impassable for wagons; and in this way they would arrive at San Diego during the healthy season.

From all I can learn of the other routes to California, I am induced to believe that, should our government, at any future time, determine upon making a national road of any description across the continent, the southern route we have travelled is eminently worthy of consideration. We find upon none of the northern routes as much water, timber, or rich, fertile soil, as upon this. There are many more mountains to pass over, and during a part of the year they are buried in deep snows.

I have been kindly allowed the perusal of a letter written by an officer of the army (an attentive and experienced observer of nature) who has recently passed over that portion of the northern route between Fort Kearny and Fort Laramie, in which he speaks of the country in the following language: "The country between Fort Kearny and Fort Laramie is a vast undulating sandy desert—but little wood or water—totally destitute of interest, and utterly worthless, and must remain so forever: it never can be inhabited to any extent, as there is no soil, and the seasons are too short."

The distance between these two places is three hundred and sixty-four miles. In one place, wood for cooking has to be carried for three consecutive days in wagons, and in several places it is necessary to carry water.

The road from Independence, after passing through a country of poor soil, and very destitute of wood, for a great distance, passes over lofty and rugged mountains, near Santa Fe.

Lieutenant Colonel Emory states that the arable soil upon this road extends to the 99th degree of longitude. Therefore, if a road could be made from the Missouri river to California, it would pass through a very barren country, which could not be settled or improved; whereas one constructed through the country we have passed over from Dona Ana to Fort Smith, with the protection which a chain of military posts along the route would afford, would open a vast tract of beautiful country to the notice of agriculturists, and would be settled in a very short time.

The advantages which this route possesses over others adapt it in a pre-eminent degree to the construction of a railroad. For the reasons I have mentioned, and from all the examination and consideration which I have been able to give the subject, I cannot resist the strength of my own convictions that any experienced and impartial engineer, after a thorough and careful reconnaissance of all the different routes, would at once give this the preference over any other.

From Dona Ana or El Paso to near where we crossed Red river—a distance of 700 miles—there are probably as few difficulties to encounter as upon any other road that can be found in our country. Throughout this entire distance it would not be necessary to make a single tunnel, or to use a stationary engine. There would be but few heavy excavations or embankments; and, for a great portion of the distance, the surface of the earth is so perfectly firm and smooth that it would appear to have been designed by the Great Architect of the Universe for a railroad, and adapted and fitted by nature's handiwork for the reception of the superstructure. There is an abundance of building stone, and an inexhaustible amount of mezquite timber, which, for its durability, is admirably adapted for use as sleepers, and for fuel.

From Red river it could be carried to Fort Smith without difficulty, or to any other point that' might be selected. This, united with a railroad from the Rio Grande to the San Diego, would give us a great national highway across our continent from the Atlantic to the Pacific, in a very direct line, and would enable the traveller to pass safely and comfortably over a distance in a week which before required four months of toil, hardship, and danger. It would afford our government a cheap and rapid transit for troops and munitions of war, and would enable us to communicate with our far-distant territories in a few hours.

These considerations, in connexion with the vast and incalculable commercial benefits that the whole civilized world would receive, would render it a monument to the genius, enterprise, and philanthropy of the American people.

I am, very respectfully, your obedient servant,

R. B. MARCY,
Captain 5th Infantry, commanding escort.

Lieut. F. F. Flint,
Acting Assistant Adjutant General,
7th Military Department, U. S. Army.

Table of distances,

Date.	Place of observation.	Distances by chain in miles.		Average bearing from camp to camp.
		From camp to camp.	Total distance from Dona Ana.	
1849.				
September 1	Organ mountains	19	19	N. 81° E.....
2	Camp No. 2...	$6\frac{3}{10}$	$25\frac{3}{10}$	S. 53° E.....
3	....do......3...	18	$43\frac{3}{10}$	S. 47° 10′ E..
4—6	....do......4...	$19\frac{3}{4}$	$63\frac{1}{20}$	S. 47° E.....
6	....do......5...	$22\frac{1}{4}$	$85\frac{3}{10}$	N. 81° 5′ E...
7	....do......6...	$8\frac{3}{4}$	$94\frac{1}{20}$	N. 72° E.....
8	....do......7...	$25\frac{19}{20}$	120	S. 83° E.....
9	....do......8...	$23\frac{1}{20}$	$143\frac{1}{20}$	S. 49° E.....
10	....do......9...	$4\frac{1}{4}$	$147\frac{6}{20}$	N. 45° E.....
11—13	....do.....10...	$5\frac{1}{10}$	$152\frac{4}{10}$	N. 87° E.....
13	....do.....11...	$15\frac{3}{10}$	$167\frac{7}{10}$	S. 85° E.....
14	....do.....12...	$11\frac{27}{40}$	$179\frac{15}{40}$	N. 83° E.....
15	....do.....13...	$9\frac{1}{8}$	$188\frac{1}{2}$	N. 67° E.....
16	....do.....14...	$15\frac{8}{10}$	$204\frac{3}{10}$	S. 64° 30′ E..
17	....do.....15...	$11\frac{1}{8}$	$215\frac{17}{40}$	S. 59° 30′ E..
18	....do.....16...	$13\frac{1}{8}$	$228\frac{11}{20}$	S. 68° 7′ E...
19	....do.....17...	$13\frac{5}{8}$	$242\frac{7}{40}$	S. 40° 40′ E..
20—22	....do.....18...	$15\frac{3}{10}$	$257\frac{19}{40}$	S. 81° E.....
22—24	....do.....19...	$9\frac{9}{10}$	$267\frac{3}{8}$	N. 82° E.....
24	....do.....20...	10	$277\frac{3}{8}$	N. 25° E.....
25—27	....do.....21...	$13\frac{7}{10}$	$290\frac{11}{20}$	N. 25° E.....
27	....do.....22...	$4\frac{3}{4}$	$295\frac{3}{10}$	N. 87° E.....
28	....do.....23...	$8\frac{3}{10}$	$303\frac{3}{5}$	N. 49° 4′ E...
29	....do.....24...	$15\frac{3}{10}$	$318\frac{9}{10}$	N. 57° E.....
October 1	....do.....25...	17	$335\frac{9}{10}$	N. 67° E.....
2	....do.....26...	23	$358\frac{9}{10}$	N. 72° 22′ E..
3	....do.....27...	$22\frac{9}{10}$	$381\frac{4}{5}$	N. 71° E.....
4	....do.....28...	$12\frac{1}{10}$	$393\frac{9}{10}$	N. 43° E.....
5	....do.....29...	$11\frac{1}{3}$	$405\frac{7}{30}$	N. 47° 28′ E..

bearings, &c.

Meteorological observations.		Variations of compass.	Camping places.
Wind.	Weather.		
West	Clear and calm	12° 28′	At springs four miles south of Pass.
West	Clear		Solado Spring, near Organ mountains.
Southwest	Cloudy and warm		On prairie; no water.
South	do		At Waco mountains, (tanks.)
East	Clear, cool, and strong wind.		Sierra del Alama, (spring.)
East	Rain; cold wind.		Comudas, (deep wells.)
Southwest	Mild and clear		Ojo del Cuerbo, (springs.)
South	Warm showers		Peak of Guadalupe, (spring up ravine.)
South	Morning clear; evening rain.		Ojo del Camins, (spring in the pine timber.)
North	Cool wind; clear.		Independence spring, near road
East	Cool; rain last night.		Ojo de San Martin (spring.)
Southeast	Mild and clear		On Delaware creek.
South	Cloudy and mild.		
Southeast	Clear; warm and strong wind.		At Rio Pecos, (brackish water.)
Southeast	Cool; cloudy		Do do
East	Cold rain and windy.		Do do
Northeast	Cloudy and warm		Do do
North	do	11° 8′	Crossing.
Southeast	Warm; rain.		Laguna, (brackish water.)
East	Rain; mild		On prairie, (no water.)
North	Cold; rain.		Sand hills; water to the east, in the hills.)
North	do		Do do
West	Clear and cold		Pond.
West	Cloudy and cool.		Pond on Llano Estacado.
Northeast	Clear and cool; windy.		Do do
East	Clear; moderately warm.		Laguna Colorado; water in pond.
Northeast	do do		On "Big Spring," to the south.
West	Clear; warm		Spring on the road.
Northwest	Very windy and cold.		Laguna on the road.

Table of distances,

Date.	Place of observation.	Distances by chain in miles.		Average bearing from camp to camp.
		From camp to camp.	Total distance from Dona Ana.	
1849.				
Oct. 6—8	Camp No. 30...	$18\frac{8}{10}$	$423\frac{8}{15}$	N. 56° 12′ E..
8	....do.....31...	3	$426\frac{8}{15}$	E.............
9	....do.....32...	$20\frac{3}{8}$	$446\frac{109}{120}$	N. 67° E. ....
10	....do.....33...	13	$459\frac{109}{120}$	N. 62° 28′ E..
11	....do.....34...	$18\frac{1}{5}$	$478\frac{13}{120}$	N. 52° 40′ E..
12	....do.....35...	$17\frac{1}{10}$	$495\frac{5}{24}$	N. 55° E. ....
13—17	....do.....36...	$8\frac{1}{2}$	$503\frac{17}{24}$	N. 78° 20′ E..
17	....do.....37...	4	$507\frac{17}{24}$	S. 86° E......
18	....do.....38...	2	$509\frac{17}{24}$	S. 88° E......
19	....do.....39...	$4\frac{1}{2}$	$514\frac{5}{24}$	S. 88° 30′ E..
20	....do.....40...	$12\frac{1}{4}$	$526\frac{11}{24}$	N. 70° 20′ E..
21	....do....,41...	7	$533\frac{11}{24}$	N. 68° E. ....
22	....do.....42...	$9\frac{3}{4}$	$543\frac{5}{24}$	N. 80° 20′ E..
23	....do.....43...	$11\frac{3}{4}$	$554\frac{23}{24}$	N. 68° 8′ E...
24	....do.....44...	$6\frac{3}{10}$	$561\frac{31}{120}$	N. 69° E......
25	....do.....45...	$12\frac{1}{4}$	$573\frac{61}{120}$	N. 65° 50′ E..
26	....do.....46...	$13\frac{1}{10}$	$586\frac{73}{120}$	N. 45° 28′ E..
27	....do.....47...	$14\frac{4}{10}$	$601\frac{1}{120}$	N. 65° 15′ E..
28	....do.....48...	$13\frac{3}{10}$	$614\frac{37}{120}$	N. 74° 32′ E..
29	....do.....49...	$12\frac{1}{2}$	$626\frac{97}{120}$	N. 82° E. ....
30	....do.....50...	13	$639\frac{97}{120}$	N. 48° 31 E..
31	....do.....51...	11	$650\frac{97}{120}$	S. 79° E......
November 1	....do.....52...	$13\frac{3}{4}$	$664\frac{67}{120}$	N. 83° 10′ E..
2	....do.....53...	$7\frac{2}{10}$	$671\frac{91}{120}$	S. 83° E......
3	....do.....54...	$14\frac{2}{5}$	$686\frac{19}{120}$	N. 75° 10′ E..
4	....do.....55...	$12\frac{1}{2}$	$698\frac{79}{120}$	N. 81° E......
5	....do.....56...	$12\frac{3}{5}$	$711\frac{31}{120}$	N. 60° 45′ E..
6	....do.....57...	8	$719\frac{31}{120}$	N. 55° E......
7—10	....do.....58...	$17\frac{7}{10}$	$736\frac{23}{24}$	N. 3° 20′ E..
10	....do.....59...	$8\frac{1}{2}$	$745\frac{11}{24}$	N. 20° E. ....
11	....do.....60...	$12\frac{3}{5}$	$758\frac{7}{120}$	N. 53° E. ....
12	....do.....61...	$15\frac{1}{5}$	$773\frac{31}{120}$	N. 41° 40′ E..
13	....do.....62...	13	$786\frac{31}{120}$	N. 19° 25′ E..

bearings, &c.—Continued.

Meteorological observations.		Variations of compass.	Camping places.
Wind.	Weather.		
Northwest	Cold and cloudy.		Affluent of Pash-a-ho-no.
West	do do		Do do
Southwest.	Warm and clear.		Affluent of Brazos.
Northeast	Cold and cloudy.		Pash-a-ho-no.
Southwest.	Clear and warm; windy.		Spring, (sulphurous.)
North.	Cold, cloudy, & windy.	10° 40′	Affluent Brazos.
North.	Cold "norther" 48 hours.		Do
South	Clear and mild		Do
South	do do		Do
North.	Cold rain and snow storm.		Do
North	Clear and cold		Qua-gua-he-no (Pecan timber.)
West	Clear; frost during the night.		Spring Brook (tributary Clear Fork.)
North.	Clear and warm.		Do do do
West	do do		Do do do
West	do do	10° 20′	Rio Brazos.
Southeast	do do		Affluent of Brazos.
Southeast	do do		Affluent of Trinity.
Southwest.	Warm and clear.		Affluent of Trinity.
Southwest.	do		Do do
South.	do		Affluent of Little Washita.
Southwest.	Clear and mild		Do do
South.	do		Affluent of Trinity.
South.	Clear with strong wind.		Affluent of Elm fork of Trinity.
Southwest.	Warm, with do.		Do do do
South	do do		Do do do
South	Warm and cloudy		Affluent of Red river.
Southwest.	Cloudy and showers.		Do do
West	Clear and mild		Do do
Southeast.	do		Fort Washita.
	Cloudy		"Blue" (tributary to Red river.)
	Cold rain all day.		Boggy depot.
	Clear		Little Boggy (affluent of Red river.)
	do		Do do do

Table of distances

Date.		Place of observation.	Distances by chain in miles.		Average bearing from camp to camp.
			From camp to camp.	Total distance from Donna Ana.	
1849.					
Nov.	14	Camp No. . 63. . .	17½	$803\frac{91}{120}$	N. 18° 20′ E. .
	15	. . . . do. . . . . 64. . .	15	$818\frac{91}{120}$	N. 30° 40′ E. .
	16	. . . . do. . . . . 65. . .	24	$842\frac{91}{120}$	N. 83° 30′ E. .
	17	. . . . do. . . . . 66. . .	15	$857\frac{91}{120}$	N. 80° 20′ E. .
	18	. . . . do. . . . . 67. . .	23	$880\frac{91}{120}$	N. 81° E. . . . .
	19	. . . . do. . . . . 68. . .	14	$894\frac{91}{120}$	N. 34° 30′ E. .

bearings, &c.—Continued.

Meteorological observations.		Variations of compass.	Camping places.
Wind.	Weather.		
....	Clear............	....	Prior's (affluent of Gaines's creek.)
....	..do.............	....	South Fork of Canadian.
....	Rain.............	....	Cooper's creek.
....	Clear	....	Coon creek.
....	..do.............	....	Agency.
....	..do.............	....	Fort Smith.

31st Congress,
1st *Session.*

[SENATE.]

With Ex. Doc.
No. 64.

REPORT

OF

THE SECRETARY OF WAR,

ENCLOSING

The report of Lieutenant W. H. C. Whiting's reconnaissance of the western frontier of Texas.

June 28, 1850.
Read.
July 5, 1850.
Ordered to be printed.

War Department, *Washington, June* 27, 1850.

Sir: I have the honor to transmit herewith a communication from Captain Fred. A. Smith, in charge of the Engineer Department, enclosing a copy of the report of the reconnaissance of Lieutenant W. H. C. Whiting, of the Corps of Engineers, of the western frontier of Texas, with a trace of the accompanying map, in reply to a resolution of the Senate of the 25th instant calling for such report.

I am, very respectfully, your obedient servant,
GEO. W. CRAWFORD,
Secretary of War.

Hon. Millard Fillmore,
President of the Senate.

Engineer Department, *Washington, June* 26, 1850.

Sir: In compliance with the call of the Senate resolution of the 25th instant, herewith I have the honor to enclose a copy of the reconnaissance of Lieutenant W. H. C. Whiting, of the Corps of Engineers, of the western frontier of Texas, with a trace of the accompanying map.

Very respectfully, sir, your most obedient
FRED. A. SMITH,
Captain Engineers, in charge.

Hon. Geo. W. Crawford,
Secretary of War.

San Antonio, *March* 25, 1850.

General: I have the honor to forward a copy of my report to Major General Brooke, upon the frontier of Texas; also, a sketch of the line of posts.

I am, very respectfully, your most obedient servant,

WM. H. C. WHITING,
Lieutenant of Engineers.

Gen. J. G. Totten,
Chief Engineer of the United States.

Headquarters Eighth Military Department,
San Antonio, Texas, October 1, 1849.

Sir: It being very important that a military reconnaissance should be made of the western frontier of Texas indicated by the chain of posts now established, commencing at the Rio Seco and terminating on the Red river, at the mouth of the False Washita, you have been selected for that duty.

You will be pleased to embrace in your report the general character of the country, the roads to be constructed between the posts, (taking the nearest routes eligible for such roads,) timber and stone for quarters, fuel and water, and the subsistence and forage which the country adjoining the posts can supply—also noticing the amount of population and cultivation, as well as the healthiness of the country.

You will also, after consulting with the officers in command respectively, report on the military sites now established, with the necessary works and buildings applicable to each position, the number of companies in each work, (which must be proportioned to the strength of the tribe in the neighborhood,) with the passes by which the Indians are in the habit of entering the settlements, and those particularized which are the most important. You will make a report of your survey for these headquarters.

On the completion of this duty, you will return to this post, when you will receive similar orders to make a reconnaissance from the Seco to Eagle pass, on the Rio Grande, and to the mouth of that river.

Brevet Major E. B. Babbitt, assistant quartermaster, will furnish you with the necessary outfit, and the commanding officers at the different posts will furnish the proper escorts.

I am, respectfully, your obedient servant,

GEO. M. BROOKE,
Brevet Major General.

Lieut. W. H. C. Whiting,
Corps of Engineers.

True copy.

GEO. DEAS,
Assistant Adjutant General.

San Antonio, *January* 21, 1850.

Major: In obedience to the instructions of the commanding general in this department, dated October 1, I have the honor to render a report of a reconnaissance of so much of the military frontier of Texas as extends from the mouth of the False Washita, on Red river, to Fort Lincoln, on Rio Seco.

The chain of posts now established reaches, in a direction generally northeast and southwest, from the Rio Grande, at Eagle pass, to Coffee's bend, on Red river—an extent covering a great variety of country. Between ten and twenty miles above the Wool road, and parallel to it, is found the southern slope of a range of rugged hills. This range is the lower limit of the great limestone formation of the northwest prairie; and from its base stretch the beautiful valleys of Las Moras, the Nueces, the Frio, the Medina, and the Guadalupe. Leaving the Medina, it assumes a northeasterly direction, until, passing the Colorado, it is lost in the elevated tables of the Brazos. The country which it bounds is a succession of rolling prairie and gentle slopes, clothed with luxuriant mezquite grass, and studded with groves of live oak and post oak. Watered by numerous creeks, it is one of the most desirable tracts of western Texas, and at no distant time the vicinity of the streams will be settled. To this section the base of the limestone hills will be a permanent frontier. Far to the north and west, the vast prairie presents an unbroken, sterile, and arid plain, destitute of attraction to the squatter. As the settlements are approached, this plain is broken into innumerable ravines, bounded by steep cliffs. Here are to be found the heads of the rivers of southwest Texas. Rising in this broken and difficult region, they break through the hills, forming the noted passes known by their several names. These have long been the resort of the Comanches, Lipans, and Wacos, in their predatory excursions to the lower Rio Grande and the hamlets near San Antonio. Trails are to be found running in many directions through the rich bottoms of the Llano and the San Saba—tributaries to the Colorado.

Northeast of the Guadalupe, in the direction of the line of posts, and beyond the river Pedernales, is found a country greatly different from that just described. The tameness of the limestone scenery is relieved in the rough mountains of the Colorado. The primitive rocks are everywhere met. Sienitic granite, in enormous masses, and of superior quality, and great ledges of red sandstone, through which are protruded quartz, gneiss, and felspatic rocks, form the distinguishing features of this locality. The soil is almost entirely composed of detritus from these rocks; and the indications of valuable minerals are abundant. There are many places in which silver ore is found in considerable quantity. Building stone of the finest quality and of every variety exists in inexhaustable quarries. Otherwise this section is not valuable, and, except the mountain cedar and the wood which shelter the rich and charming valley of the Pedernales to the southward, generally bare of timber. The Colorado, one of the largest rivers of Texas, waters this region. It is generally difficult to ford, and is subject to very extraordinary freshets. The lands of its valley, though confined, are remarkable for rich and productive soil; and the scenery through which the line passes is exceedingly beautiful and various. Upon leaving this river, we leave also the older formations. They gradually give place to beds of marble, and still further on to vast strata of the fossiliferous limestones. Timber begins to be scarce, and is only found in the river valleys. No country can be better watered, and creeks intersect the plains at short intervals. The remarkable feature of this region is the elevated prairie, with its unbroken horizon. Through this, and at a great depth below its level, flow, in narrow and precipitous cañons, the Lampasas, the Cowhouse, the Leon, and the Bosque—large and rapid streams, with numerous tributaries. All these rivers are of the waters of the Brazos—the dividing ridge between which and the Colorado is very near to the latter. Except in times of high water, little or no impediment exists to travelling in any direction. The steep banks of the rivers require preparation for the passage of wagons; but the Indian is not, as in the lower country, confined to certain routes for water and practicable trails: he can, without difficulty, traverse the country in all directions. Here, then, that local importance of posts with respect to certain passes which obtains in the southwest country is not felt, and their disposition depends altogether upon their *relative distance* apart and the *extent* of *country* over which their garrisons are competent to operate.

Between the Brazos and the Red river, the same general alternation of prairie and river bottom is met with. The numerous freshets of the streams, overflowing their rich valleys, render their vicinity very unhealthy. This is particularly the case with the Trinity, whose broad lands are often entirely under water. Perhaps the most remarkable features of this section are the two great belts of forest known as the "Cross Timbers." Distant about fifty miles apart, they reach from the Brazos across Red river, and are separated by a prairie entirely destitute of wood. Throughout the lower, the settlements are rapidly increasing. Abounding in game, and containing many tracts of valuable lands, sheltered from the "northers," these belts are important as being a favorite range for many of the Texas Indians, and their usual home in the winter. About fifty miles to the north of the Trinity, in crossing the divide between it and Red river, the northern limit of the great Texas limestones is found, and the Red sandstones of Arkansas commence to appear.

Such is a brief sketch of the most remarkable characteristics of the extensive line of country upon which the troops are placed to operate. Their stations, when the nature of the enemy and of the country is considered, will be found not to depend at all upon local advantages for attack and defence—a matter of great moment in the establishment of positions against a less barbarous enemy. Regarded as starting-points and resting-places for the scouts, whose duty is to restrain and punish Indian depredation, their relative distance becomes the most important consideration. This, however, is *especially* true only of the upper part of the frontier; and as this report is properly confined to that portion, I wish to leave the account of the Seco and its vicinity until I can consider it in connexion with the remainder of the line.

The route between Fort Lincoln and Fort Martin Scott, in nearly a direct line, has generally been supposed impracticable, on account of the numerous rugged cañons which intersect the hills. A careful examination which I commenced from Fredericksburg in the direction of the Bandera pass (and which was finished by Capt. Steele, 2d dragoons) points out a road at least equal to that between San Antonio and Fort Martin Scott. This route, joining the old ranger trail about ten miles northeast of Vandenburg, crosses the Medina, and by the Bandera pass reaches the valley of the Guadalupe; thence, in nearly a straight line, it attains the Pedernales valley near the station. This celebrated Indian pass has been known as an Indian road from the earliest history of the Spanish settlements. It has been identified with many a frontier fight and many a hostile inroad. By it the passage from the Guadalupe to the Medina is readily made, and the precipitous cliffs and difficult ravines which separate these rivers on the dividing ridge avoided. It is still used by the Indians. Their towns yet remain on the Guadalupe hard by it; but the establishment of the posts and of the ranging stations has rendered the vicinity unsafe for them. It is an outlet of great importance, and I consider it well that the trail of the scouts and patrols should pass through it. The general character of the route is hilly, and the distance about one hundred and ten miles. Some labor would be required to prepare a wagon-road; and, on account of the facility of communication from either post with headquarters, I consider it unnecessary that more than the trail for the scouts should be indicated.

Fort Martin Scott is pleasantly situated on the west bank of Barron's creek, a small tributary of the Pedernales, about two miles from the town of Fredericksburg, and seventy-five from San Antonio. Its site is healthy, convenient, and judiciously chosen. Placed in a section of country which is part of the rich valley of the Pedernales, clothed with a plentiful growth of post oak and cypress, with abundance of building stone, lime, and sand hard by, and among settlements rapidly increasing, it has almost all the requisites for the quarters and subsistence of troops. It has a central position with respect to the upper and lower settlements of the Pedernales, and to the towns of the Germans and the Mormons. The latter place thriving, its mills supply the neighborhood with lumber and meal, and ample crops furnish the forage required by the troops. Fredericksburg is a healthy position: the garrison appeared to advantage, and I have heard of no endemic disease existing there. As to buildings and quarters required, the fine barracks of hewn logs already put up are ample for all present purposes, and other than these no defensive works are necessary; yet, for complete security against horse-stealing by the Indians, I would recommend that all public stables be enclosed by a high and strong picket fence.

Fort Croghan, the next station on the line, is situated at the head-spring of Hamilton's creek, a small tributary of the Colorado. In a pretty valley, sheltered from the northers by the neighboring hills and groves of post oak, the position, in point of health and comfort of the troops, is found to be a good one. I examined with great care the country lying between this and Fredericksburg. As before mentioned, this section is very rugged and difficult, and in its formation is distinct from other portions of Texas. Leaving Fort Martin Scott in a course nearly north-east by east, the connecting road will pass from the Pedernales valley through Connor's gap, and thence continue to the Colorado, crossing it just below the mouth of the "Sandy." A continuous valley lies between the rough mountains which enclose that creek and the hills to the eastward, which are the divide between the Pedernales and the Colorado. The passage of the latter river is difficult. The ford has been much used by the Indians, but is scarcely practicable for wagon communication. Should that be deemed essential, a ferry must be placed near this point, which involves the establishment of a settlement or a guard. Certainly the valley and the lands in the vicinity are exceedingly rich and beautiful, and well adapted to attract settlers; but, for the purposes of scouting and express, the obstacle is not great enough to require this. Fifteen miles from the crossing is the station of Fort Croghan; and the whole distance is not greater than sixty miles. The troops at this post had already constructed their shelters for the winter in a very substantial and creditable manner. They are well laid out in suitable arrangement. The marble and common limestone abounding in the vicinity have supplied good building material; and chimneys, ovens, and other necessary structures of masonary have been put up, not only with rapidity, but neatness. Four miles below the fort, upon Hamilton's creek, was the cantonment of the rangers known as "McCulloch's station." This was the point originally selected for the troops. Some disagreement with the owners of the land caused their removal to their present locality—a fortunate thing; for the ranger camp, from the miasma arising from the sinkholes of the neighboring prairie, is found to be unhealthy. The valley of the Colorado is open to the same objection; otherwise, it would be expedient to occupy that. No such complaint is made of Fort Croghan; and the medical officer of the post informed me that the men had been uniformly healthy since its first establishment. This station is about fifty miles distant by the road from Austin, and receives its supplies from that point. The resources of the vicinity, particularly on the Brushy and the San Gabriel, are ample for the supply of the forage and the market of the garrison. No settlement exists to the westward. While the rangers occupied this section, a guard was detailed, which held the points at the Sandy crossing and at the mouth of the Llano, (where is also a ford,) with a view to prevent the passage of the lower Brazos Indians to the country south of the Colorado.

Communication between this post and that on the river Leon, the next on the line, is very easy. Distant about seventy-five miles, the latter is placed on the left bank of the stream, in one of the finest valleys occuring upon the route. No other labor is required to make a fair wagon-road between the stations than to slope the banks of the rivers at the fords. As observed in noticing the general characteristics of the country, these rivers are remarkable for the deep channels through the prairies by which they make their way to the lower country. The valleys are formed in several plateaux, which, like great steps, render the descent to the water less difficult. Covered with a heavy growth of timber, and comprising a great deal of fine land, this section holds out many inducements for settlers, who already are beginning, assured of the protection of the troops, to take advantage of it. Here is found the southern limit of that enormous bed of marine fossils which stretches far away to the territory north of Red river. Few tracts are more interesting to the geologist. The precipitous cliffs of the rivers display the various strata, perfectly defined by their remains, from the lower fossiliferous limestones to the last beds of the sandstones, which lie exposed on the surface of the prairie.

Owing to the lateness of the season when Fort Gates was established, the barracks and buildings of the post were not quite so forward as elsewhere on the line. Fine timber is found abundantly in the vicinity, and the garrison may depend upon the settlements within fifty miles on the Austin road for supplies of forage and beef.

Fort Graham, on the left bank of the Brazos, occupies the position known as José Maria village. No place on the line is more remarkable for its beauty and fitness in every respect for a garrison. A clear creek passing the camp gives water to the post. The fertile lands of the Brazos are spread out before it. It is healthy—the late sickness so prevalent among a portion of the troops having been due to their stay in the pestilent region of the Trinity. A substantial building has been put up as a hospital, and the shelter for the men nearly completed. To Fort Gates the distance is about fifty-five miles—the route between the two posts lying to the eastward of a direct line, forced in that course by the rough country of Coryell's creek and the upper Bosques. Wagons have already passed over it, and it is in all respects a good one. At the post a ferry has been established, which in time of high water keeps up communication. Timber of cedar and oak abounds in the vicinity; and the settlements to the eastward and lower down on the Brazos afford forage and a market ample for the wants of the post. It is greatly frequented by Indians of all tribes. Most of the Texas bands live upon the upper Brazos; and the vicinity of the trading-house about fifty miles above Fort Graham renders it a place of great importance. A direct road to Austin, one hundred and thirty miles long, is much travelled, and is now the route for supplies.

Fifty-four miles above Fort Graham, in nearly a north direction, at the junction of the Clear and West forks of the Trinity river, is Fort Worth. An excellent road, skirting the western edge of the Lower Cross Timbers, is already made between the posts. The latter is the most northerly of the chain, and is the most objectionable in its position. The Trinity, a rapid stream, to which belong many tributaries, is subject to very sudden rises. Unlike the rivers to the southwest, its valley is a level flat, between which and the Great Prairie there is but one descent. From two to three miles wide, and covered with a dense growth of trees and underwood, this is by the freshets converted into soft mud; and when the water subsides, it leaves to the sun a mass of rotted vegetable matter and half-dried mud, whence the constant sickness in the country is engendered. Fever and ague prevail through the whole year, and the troops have suffered from it very much. The timber which exists at all westward of the "Cross Timbers" is only found in these valleys of the streams, and there it is impossible to live. The garrison is therefore forced to the high plain, exposed all winter to the northers and sleets of the country, and in summer to scorching heats. The fort has been laid out on a scale rather contracted—probably as designed originally but for one company. And the arrangement of the stables I cannot commend: they are much too near the quarters of both officers and men, and, however thorough the police may be, cannot but be offensive in summer. The question of security or defence is readily settled. A picketing with a guard, considering the nature and mode of warfare of the probable enemy, is ample. To place the stables within shot from the barracks, in such wise that its approach, in event of a *coup de main*, is commanded, I think is all that is required.

A mill, worked by horse-power, hard by the post, and the thickly-wooded bottom of the Trinity, furnish cheap and abundant supplies of lumber and fuel. A coarse-grained marble, making excellent building material, and plenty of lime and sand, are found in the neighborhood. No post is so plentifully supplied as to forage and subsistence. Within forty miles are the little villages of Dallas and Alton; and numerous hamlets are found through the Cross Timbers, which afford nearly everything that is required for consumption by the troops.

The route between Fort Smith and the Red river is already practicable, and skirts the western edge of the Cross Timbers for about eighty miles. After crossing Hickory creek, thirty miles from the post, the houses of squatters are to be seen at short intervals all along the road, as far as the little village of Preston, in Coffee's bend. The distance between Fort Washita and Fort Worth is one hundred and twenty miles, and entirely too great for their small garrisons to scout over effectually. An extensive line of country is exposed to the incursions of the Witchitas—a wild tribe, with which, as yet, no relations have been established. They live upon the Red river, some fifty miles west of the line, and are hostile. Should it be deemed sufficiently important to establish another post between Forts Washita and Worth, I recommend the position at the Elm fork of Trinity—formerly a ranger station, and about midway on the road—as satisfying all requisite conditions.

From this brief notice of the different stations, to avoid repetition, I proceed to some general remarks applicable to them all. The buildings required at present are such as are in process of erection—comfortable log houses; and, besides the recommendation that capacious hospitals, with suitable accommodation for attendants, be made, I have nothing to add upon this matter. I might say that great expense would be saved to the government, as well in money as in time and labor, while the efficiency of garrisons would be consequently increased, if each post were supplied with a circular saw and its apparatus, to be worked by horse-power. At all of them are a number of mules: many of these are pack mules, and, when not used in the scouting parties, could be applied to this without additional cost. The advantages resulting are so obvious, that it is unnecessary to enter into the details of expense. All the lumber required could be supplied by three or four men; and not only would the buildings be neater, more comfortable and convenient, than those of rough-hewn material, but the effective force of the garrisons be put to their appropriate duty and discipline. The weight of Texas lumber, and the distance of posts from places where mills are worked, render it extremely expensive; while, by this means, all that is incurred is the original cost of machinery—an outlay, in consequent saving to government, many times covered.

I have to urge that the garrisons occupying this line, with the companies as at present organized, are far from strong enough to be effective; and this is a matter of such moment as cannot be too forcibly represented. Certainly, occupied with building, charged with scouting over an extensive line and protecting a great frontier exposed to a restless and active enemy, this command, even when not disturbed, must be considered as in a state of war. It is expected to be always ready; and this, with the skeleton organization, is impossible. This is especially true of the lower posts, including that at Fredericksburg; for above a different state of things exists. Most of the Indians of Texas find a home upon the upper Brazos, within a few days' march of the more northerly posts. There are their cornfields, their women and children—there the pasturage of their horses. In the Upper Cross Timbers, and about the head of the Leon, is the range of the lands of the Ionis, Keechis, Caddos, Tahuacanos, Tancahuas, and Wacos. The Witchitas live on Red river. These people are naturally cautious of depredating on settlements protected by posts so near to themselves, and whence they may meet a severe retribution. Accordingly, we hear of but few disturbances in that quarter. Occasionally a horse or a beef is taken, but murders are of rare occurrence.

The case is different below; and while the old men and the chiefs are visiting the upper posts in good faith and amity, and their hunters carrying on an active trade in game, their young men are almost continually on the war-path against the settlements of the lower country. For such reasons, great activity and efficiency are required of the garrisons bound to afford protection there. I cannot recommend less than two mounted companies of one hundred men each at Fort Martin Scott. With a force large enough to allow the detail of strong and frequent scouts, its position is such as to render great service in punishing, as well as restraining, Indian depredation. Within one hundred miles, in a westerly direction, pass all the great trails, at known points, by the rivers of the lower country. Differing from the northerly parts of Texas, this is rugged and difficult, and there are certain passes by which the enemy is forced to move. This fort, from its situation, may be said, by active scouting, to command them. On the Llano, the San Saba, and the Concho, is much valuable land. Already the Germans are pushing their settlements into these sections, and from it must be furnished the protection they need.

Forts Croghan and Gates are of less general importance. They serve for the protection of their immediate neighborhood; and their situation is dependent upon the distance over which their forces are competent to operate with effect. For garrisons of two companies, (the least I could recommend,) this distance appears to be about sixty or seventy miles; and while the nature of the country is such that the Indian can move in all directions, from the same cause the news of his approach flies rapidly, and he is readily pursued.

To Fort Graham, on the other hand, I attach great importance, for reasons which apply to it peculiarly, on the upper frontier. In the immediate neighborhood of the various Indian tribes, in whose camps may be heard the bugles of the garrison, it is regarded by them as a council-spot—a place where they will make their treaties, and receive their presents. To see and to feel the power of the country directly at their own homes, has upon them a great effect. Its proof is, that, while hundreds, perhaps thousands, of them are ranging through the woods and up the creeks, it seems perfectly safe to travel, and the numerous animals of the post graze, on the broad valley of the Brazos, month in and out, without disturbance or theft. The relations which exist at this fort with the Indians satisfy me that the *nearer to them garrisons of force are established* the better the results. In time of general hostilities, active operations may be conducted from Fort Graham with signal effect. Striking by the line of the Brazos, in the winter time, when the cold winds make the great prairies uninhabitable, and when grass is to be found only upon the creeks and in the river valley, its troops have a formidable position. The tribes cannot or will not understand why, one day, this post may be called upon to chastise them for outrages committed many hundred miles away. Should that time come, it would be well that the work be done with vigor; and I think, therefore, that about two hundred men should be stationed here.

Perhaps more complete protection to the extreme north of the line, now quite exposed, and rapidly being settled, might be afforded by dividing the force at Fort Worth, and placing one wing, say, at the Elm fork of Trinity. One hundred and twenty miles is too great a distance to be covered by one small post. But, in this disposition, I consider it necessary that the single companies be increased to the war numbers.

Such is a cursory view of the line, as now fixed; and I believe that a *disposition* better suited to the nature of the country, the enemy, and the *present* exigencies of the settlements, cannot be made. Certainly, with such numerous and active tribes on the border, the frontier from Hamilton's valley to Red river has been remarkably free from disturbance. Be it understood that I allude to the *upper country alone*. But it is easy to perceive that the present condition of things here cannot long be maintained; and, though now the line of posts is at the proper distance in advance of the settlements, the latter are in rapid progress. The stations themselves induce them; and many will be speedily pushed into the rich districts of the upper Colorado, Leon, and Brazos. A more extensive system will be required, and one which must bear, not only upon the people of Texas, but on those of Mexico. Unable, then, to regard the present line as permanently established as an Indian limit, I have not made such particular recommendations as fixed garrisons require.

The natural frontier—that is, the boundary between the sterile plains of the northwest and the arable lands—will probably be the future permanent line; and excellent positions might be established between the mouth of the little Witchita and the head of navigation on the Rio Grande—the chain of posts following the valley of the Palo Pinto to the old San Saba fort, and thence by the heads of the Nueces and Las Moras. Such a line penetrates the very heart of the Indian country. The wild tribes see, not small garrisons many hundred miles away, but large and powerful posts, which, upon the news of outrage, retaliate with terrible effect. Such a command distributed upon this line will impress the savage with an idea of the power and resources of the great republic which he has never before entertained, or has regarded as fabulous. To know us, they must be made to feel us; and I can conceive of no better plan for this end than the disposition of two thousand mounted men upon the frontier, of which a garrison of two hundred may be placed on Red river, five hundred on the Brazos, three hundred at the old San Saba fort, (a locality peculiarly eligible,) three hundred at Las Moras, and seven hundred at Presidio del Norte. Here are five positions which I wish to be understood as recommending—not at all for their advantages as to their moral effect upon an enemy of the kind considered, but simply as places by which the force is availably distributed, strong action provided, and depot and refuge secured. From these points, where the force is concentrated, and ample provision for active service supposed to be made, the *moving camps* of the cavalry diverge, scouring the country to and from the settlements, preventing the passage of Indians, compelling them to remain in their own land, and, if forced to that extremity, capable of exterminating them. These commands, remaining in the field in *constant motion* for the proper length of time, return to the large forts, whose garrison is ample to relieve them, and thus keep the men in a state of sufficient activity, with sufficient rest.

Independent of the well-known fact that a concentration of force is the greatest promotion of discipline and efficiency, and that the great principle of war is the same whether the enemy be civilized or barbarous, and that by such services the troops become daily more inured to the country, and better acquainted with the manner of warfare of the Indians, I believe such a system to be far less costly than the distribution in small and numerous fixed garrisons. I believe that it is the speediest and the surest mode of operating against those wild nomadic bands of many thousands of robbers who infest our enormous frontier, and against whose incursions government is bound to protect its own people and that of the neighboring country, blighted for so many years. And, while conscientiously advocating such a system, I hope I may be understood simply as suggesting, in the belief that, even in the crude ideas of the inexperienced, abler and wiser heads may find something which they may improve to most salutary effect.

I have the honor to be, major, your most obedient servant,

WM. H. C. WHITING,
Lieutenant of Engineers.

Major GEORGE DEAS,
Assistant Adjutant General Eighth Military Department.

SAN ANTONIO, TEXAS, *March* 14, 1850.

MAJOR: I have the honor to continue my report of a reconnaissance of the military frontier of this department.

The post at Rio Seco, called Fort Lincoln, is situated on the Wool road, fifty-five miles west of San Antonio, thirteen from Vandenburg, and two from Dhanis, the extreme western settlements of the Germans. It is important as furnishing protection to these hamlets, but chiefly as a post of escort and refuge for the extensive travel of the road. Its supplies are generally and readily obtained from San Antonio and the German settlements. The position is healthy, the water good, the grazing of fine quality; but otherwise, from the general dryness of the country around it, and the want of suitable building timber in the vicinity, it does not present so many attractions as most of the other posts in Texas. I think that the temporary quarters may be much more readily and cheaply erected of stone than of wood. Ample quarries are at hand, and the buildings required may be put up of limestone with much greater rapidity than with logs. It has been found necessary to haul the timber of which a few houses have been already built six or seven miles—a cause of great delay.

The Wool road, the route of communication between San Antonio and the Rio Grande, is so far excellent, and a great deal of travelling is made upon it. Thirty-four miles west of Fort Lincoln is Fort Inge. This post, near the head of the beautiful Leona, is justly regarded as one of the most important and desirable positions in Texas. No station on the line possesses so many peculiar advantages as this. On a great inland route of commerce, at the point where the great military road to El Paso del Norte leaves the road to Eagle pass, in a country celebrated as the richest and most desirable, in point of wood, water, and soil, west of the Colorado, surrounded by beautiful scenery, capable of supplying the wants of the troops many times over, it is pre-eminent as a military site. In a state of contant warfare and constant service, its garrison has onerous duties, and, on the present line, above all others, demands strong forces and constant supplies.

The arrangement of the quarters and other public buildings about the place, for security, stability, comfort, and neatness, reflects great credit upon the officers and men. Capacious barracks have been put up, at but small expense; large and fine gardens have been laid out and cultivated, promising ample supply for the inhabitants. The grazing in the vicinity, through the rich mezquite flats of the Leona, is unrivalled.

It possesses the great additional advantage of health: the reports of the medical officers show that but little disease of any kind has ever visited the station. Supplies have been chiefly obtained from San Antonio. The establishment of the post, and the consequent security in its immediate vicinity, have invited several corn-planters on the Leona; and it is presumed that forage, vegetables, and beef may soon be abundant in the neighborhood. Shingles are readily procured from the cypress of the Sabinal and of the Frio, the rivers next the Leona, where parties of citizens are engaged in their manufacture. The forests of mezquite which clothe the Leona bottom afford abundance of fuel.

The present road between Fort Inge and Fort Duncan, at Eagle pass, is mostly by the route taken by General Wool in his invasion of Texas, through Presidio Rio Grande. It followed an old smuggling trail, and is very circuitous in its course. I was instructed to examine the intermediate country, with a view to ascertain the practicability of a shorter route. This I succeeded in, finding that the distance travelled may be shortened about twenty miles by following a straight course between the posts—a fact of great importance, when the amount of supplies passing the road is considered, and the great danger incurred by trains now compelled to be more than one night out in reaching Eagle pass. Between the Nueces, the Mina, and the Muela, it will be necessary to cut through the chaparral. This might employ from ten to twenty axes between six and ten days. Other than that, nothing is required for the road but log bridges over the Mina and the Chicon, such as are seen on the present road. These little streams are very narrow and easy to bridge, but boggy and difficult to ford. More water, and at generally shorter intervals, may be found on the proposed direction than on the other. By the latter, the distance travelled is nearly eighty miles, while the two forts are but little more than fifty miles apart.

Eagle pass is a name given by the Mexicans to a cañon through the hills on the other side of the river, and near the mouth of the Escondido, by which passes the road to San Fernando. A mile or two above this is situated Fort Duncan. The river bottom is here, like the valleys of upper Texas, found in three plateaus, on the highest of which is the encampment. But, unlike them, it is destitute of timber and of shade-trees—so desirable here: mezquite alone is found. A range of rough sandstone hills, of no great elevation, limits the valley, and overlooks the camp. The site is healthy, and pleasant breezes render it desirable in summer; but the great drought which prevails during nearly all the year makes it compare unfavorably with many other posts.

There is a great deal of passing both of California emigration and of inland and of Mexican commerce by this place; and it may from this, and its position as the probable head of all navigation on the Rio Grande, become an important point. Above the post, and close by, an American settlement has been commenced. Corn, beef, and lumber are supplied from Mexico. The cheapest and best building material is stone, the quarries and quality of which are fine. *Adobe* is likewise much used, and found to answer very well.

The country lying between San Antonio and Leona has already been often described; that between the Nueces and the Rio Grande, on the

Wool road, compares with the former unfavorably. Subject to almost constant drought, badly watered, clothed with cactus and thorny chaparral, it presents an aspect dreary and desolate in the extreme. This effect is increased as the Rio Grande is approached. But in the vicinity of the Nueces, and about the heads and along the banks of the creeks which uniting form the Espantosa, is found excellent grazing. No country is better adapted than this to the Indian in his purposes of depredation, escape, and concealment. Lurking in the thick screens which line the road, he observes all that pass. From strong and well-armed parties he lies hidden; the weak and careless are almost invariably attacked. From the Las Moras to the Leona, hundreds of trails attest his presence. The late events along this route show that a settled disposition to war on the part of the Texas Indians is arising.

Hard by Fort Inge passes the Indian high-road of the Frio. Next are the trails of the Blanco and the Sabinal. Within nine miles of Fort Lincoln is Ranchero's creek, sometimes called the Maucinal.

Here, in the thickets which grow about the crossing, eight new graves bear witness to its dangerous vicinity. It is by the passes of these several streams that the Indians in general come from the upper country and retire to it. Hard pressed, however, they will forsake the trails and pursue their flight over such rugged country as almost to defy pursuit. Below, it is equally difficult. Once in the chaparral of the great plain between the Nueces and the Rio Grande, a country through which thread in every direction the trails of countless wild horses, baffling the most skilful woodsmen, pursuit is wellnigh hopeless. Here they are central with respect to the settlements of Goliad, Refugio, Corpus Christi, the towns on the Rio Grande, the ranchos about the old roads, and the route to Eagle pass. Should the troops fall in with them, if hard pressed, and unable to reach the upper country, a retreat into Mexico is open to them. The most *unremmitting* and *active motion* through this large section of country, by a force *strong enough* to keep it up, and properly armed and mounted and *disciplined*, would seem to be the only means of prevention. Even then punishment is difficult. That, I think, is *summed* in the word *retaliation*.

That portion of the present military frontier which extends from San Antonio to Eagle pass is, then, to be regarded in a very different light from the upper line, both as to its relation to the country it protects and to the enemy. But few of the observations made upon the posts to the northward apply to Forts Lincoln, Inge, and Duncan. With limited means and force, the garrisons of these three posts are in a state of continual warfare. The escort duty, upon which they are likewise constantly engaged, is severe upon men and animals, and often cripples their efficiency in time of emergency. Two great military and commercial routes pass by them, upon which, for security, demands are always being made. A large amount of property, both public and private, peculiarly exposed to depredation, is always in motion along the road. Hence, it is plain to see that, if a necessity for not only a *change*, but an *increase* of *force*, exists anywhere, it does here. Each of these posts requires, at the very least, two hundred well-mounted men, with extra horses. The well-known fact that for years this section of country has been the most dangerous in Texas; the late events—the audacious attacks upon government trains, heretofore in general respected by the Indians—while they show a settled purpose of hostility on their part, are the strongest arguments in favor of the views offered.

Doubts have arisen as to what tribes have been chiefly concerned in these outrages. It is my belief that all take their part. At any rate, we have strong evidence against Comanches, Wacos, Witchitas, Lipans, and Tahuacanos.

The vicinity of Corpus Christi, until the employment of the rangers, has been particularly exposed, and has, from the numerous horses and cattle owned there, been a favorite point of attack. The post of two companies on the Nueces lately established, acting in concert with the rangers, will afford much greater security.

Taking a general view of the line as established, and of the various events which have occurred, I must believe that the system of small fixed garrisons of infantry and of skeleton organizations of regiments on this part of the frontier is *powerless*, or nearly so. And so long as the Texas Indians, from the great Comanche tribe to the Apaches and Navajos of the west, are looked upon as a people whose rulers possess the power to keep them to treaties and stipulations; so long as the troops upon the line are forced by their circumstances of numbers and equipment to maintain defensive instead of offensive operations,—the state of unhappy affairs so often alluded to and often represented must exist. With me it is a conviction which the experience of each day serves only to strengthen, that the country will continue to hear of murders and robberies in southwest Texas, and its citizens to suffer, until authority and force be given to strike at the heart of this people.

The two reports rendered show a view of the line of posts and their present condition. It is now established, apparently, regarding the present state of the Texas population. That is rapidly increasing; and doubtless reference will soon be had to this progress, and to the not less important stipulations of the treaty with Mexico. There are some general remarks to be made which I believe are not inappropriate in this paper.

In the previous report, the comparative quiet which has marked the upper portion for the past year was noticed. This should not be misconstrued as applicable to the remaining portion of the line. It is believed that a sufficient reason for this apparent discrepancy was there advanced.

The early history of our western posts, from Council Bluffs to the head of the Mississippi and the lakes; the policy of the British government with her Indians; and, above all, the practice of those sagacious and enterprising soldiers, the old Spanish adventurers,—all teach that the most efficient system with such an enemy is the establishment of a powerful garrison *in their midst;* and the *surest*, and, in the end, the *most humane*, preventive is *retaliation*, not only on the offenders in person, but upon the *tribes to which they belong*. The same state of things which long ago obtained on the western frontier of New York, Pennsylvania, and Virginia, and afterwards in Georgia and Alabama, is to be seen here now, and calls for the same effective and terrible remedy then and there applied. I have hinted already at the distribution of a large force upon this frontier, in such a way as seems available. It may not be improper to say something of the peculiar fitness of the positions recommended.

The line stretching from the mouth of the Little Witchita to Presidio del Norte rarely approaches the natural division between the lands, which in course of time will be settled, and the wild plains, which offer attraction to the Indian alone. It has a bearing not only upon the citizens of Texas, but upon those of Mexico, equally entitled to protection. It affects not the numerous and powerful tribe of Comanches only, with the small bands of roving plunderers, generally known as Texas Indians, who inhabit the upper Brazos and the forks of the Red river, but also the scarcely less numerous or less warlike bands of the Apaches, dwelling in the rugged region west of the Pecos. Those who have witnessed the stagnation in every branch of industry which pervades Chihuahua and the neighboring States can form an adequate idea of the terrible desolation by these tribes. Facts heretofore but little known, and less thought of, appeal earnestly.

The proposed camp at the mouth of the Little Witchita should hold in check the fierce bands of northern Comanches—the destroyers of Bent's fort, the pest of the western routes, and the fiercest and most intractable plunderers of Mexico known. It will be able to extinguish at once the Witchitas—a remnant of the once numerous Wacos, and the constant trouble of both northwest and southwest Texas—not more than two or three hundred in number: they dwell in that vicinity.

Of still greater importance would be the post upon the Brazos—as placed among greater numbers, requiring larger garrisons, as regarded by the Indians as their place of appeal and as their place of punishment, and that thence, when circumstances require, may be struck the severest blows.

The old San Saba fort, in the beautiful and luxuriant valley of the river of that name, is particularly eligible. One of the emigrant routes to California passes by it. It is situated with peculiar advantages for scouting to and from the settlements, and detecting the advance or retreat of predatory bands. It is the point once occupied by the Spanish garrison, whose work still remains, at once a lesson and a warning. From this point the scouts may scour the country traversed by the Indians in their descents to the lower country. To the westward pass those large bands of Comanches which, secure in the recesses of the Sierra Madre and the Bolson de Mapimi, carry on such extensive forays in the Mexican States, returning with incredible numbers of horses and mules.

The "Las Moras" mound, in the beautiful country through which passes the military road to El Paso, is important as an extreme point on that road, and as commanding the country crossed by the Indians *en route* to Coahuila and to southwest Texas. But of more local interest, perhaps, than any other point, is the vicinity of Presidio del Norte, not yet occupied by our troops. Hard by passes that great highway, the trails, which are the wonder of every traveller who crosses them; their worn and dusty length, and the vast number of bones which are scattered along the course, bear witness of their constant use. I have been credibly informed that as many as five thousand head of animals have been taken at one time by this route, and have more than once passed it myself when it gave every indication of having been travelled by great numbers. Within striking distance are the homes of the warlike Apache, now at open hostility with the United States. His towns are found, of many lodges, upon the Rio Grande, between Presidio and El Paso. In the spring and summer he recruits his horses on the rich mezquite which clothes the sheltered valleys of the great Sierra. The importance of the position has been more than once urged; and, in connexion with its occupation, and as an important element of the military system, I would again earnestly call attention to the construction of the road by the river between this place and El Paso.

Considering the numbers of the enemy and the nature of the duties called for, I cannot regard the garrison recommended as too large. The force should be sufficient for the detail of ample parties to meet any contingency.

But while I have thus dwelt on these positions, of far greater interest do I deem the nature, numbers, and especially the mode of operating, of the troops proposed for their occupation. So that the force is sufficiently large, and availably *distributed, and strongly concentrated,* the matter of positions alone becomes in general one of mere local moment, and decisive by the fitness for garrison purposes. It is then thought that, with a disciplined mounted force, lightly equipped, of not less than two thousand men, acting *continually* by a system of *moving* camps, the great ends in view may be accomplished. The duty is active, the facility of motion of starting expeditions incalculably increased, and the skill and courage of the soldier brought to bear more effectually upon an enemy of the kind considered. It seems unnecessary to enter into detailed arguments upon assertions of this nature. They involve but the substitution of strong bodies for weak, of light cavalry for heavy armed infantry, of active field operations for garrison service. The two great points may be shortly stated. The posts should be where the *Indians live,* instead of where the *citizens* live; and the first news of the departure of any party should be followed, not only by their pursuit, but by *punishment of the remainder of the tribe.* Collateral are other advantages, which, while distinct from the effect upon the Indian, are conducive to it: the increased skill, discipline, and efficiency of the soldiers, and the decreased expenses.

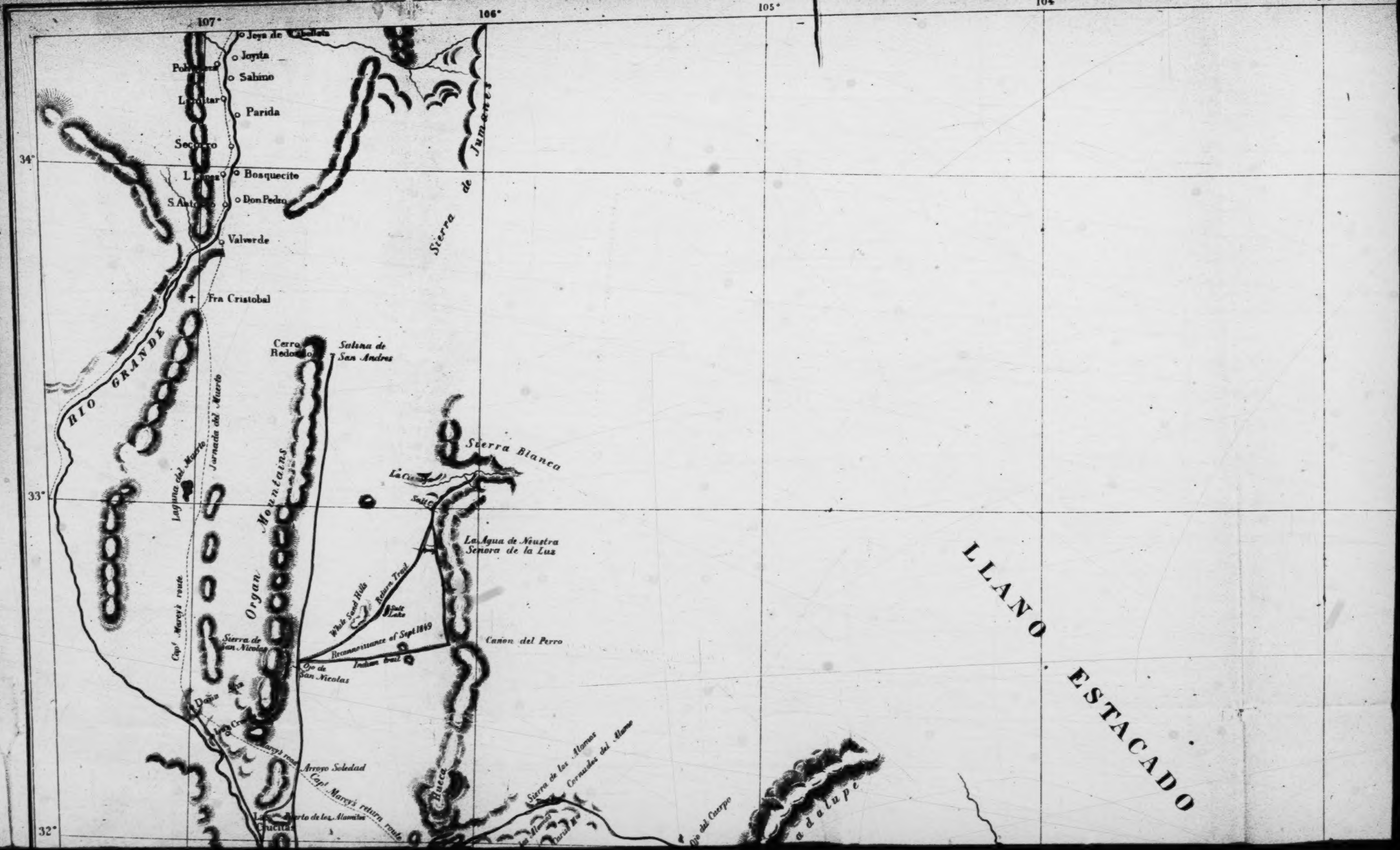
The troops of the United States upon this frontier are expected to perform, as at present organized, what I sincerely believe to be impossibilities; and brave officers and soldiers of infantry, with no superiors on their own fields, are powerless here.

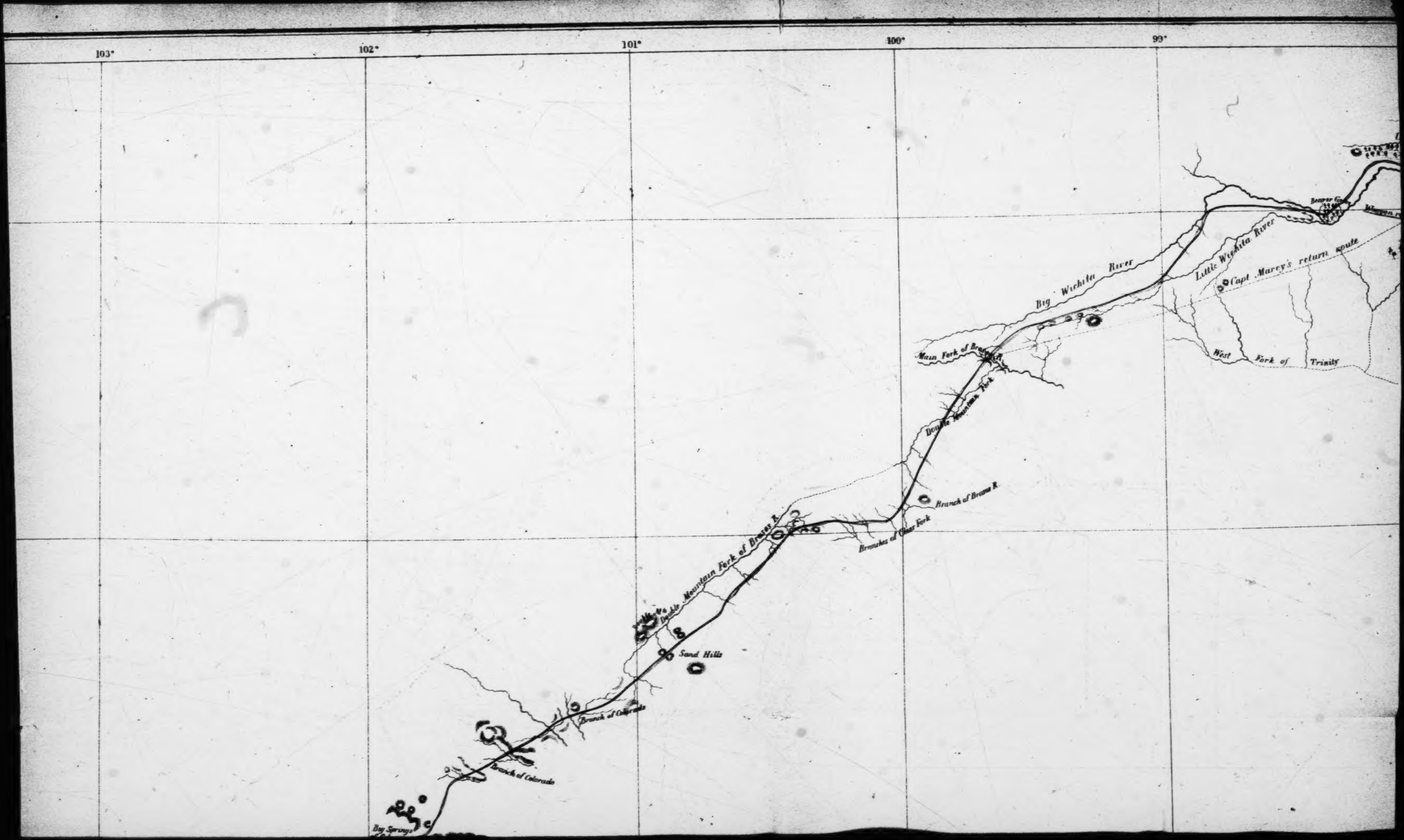
Accompanying this will be found a sketch of the frontier, as correct, I believe, as my imperfect instruments allowed me to make.

I am, major, your most obedient servant,

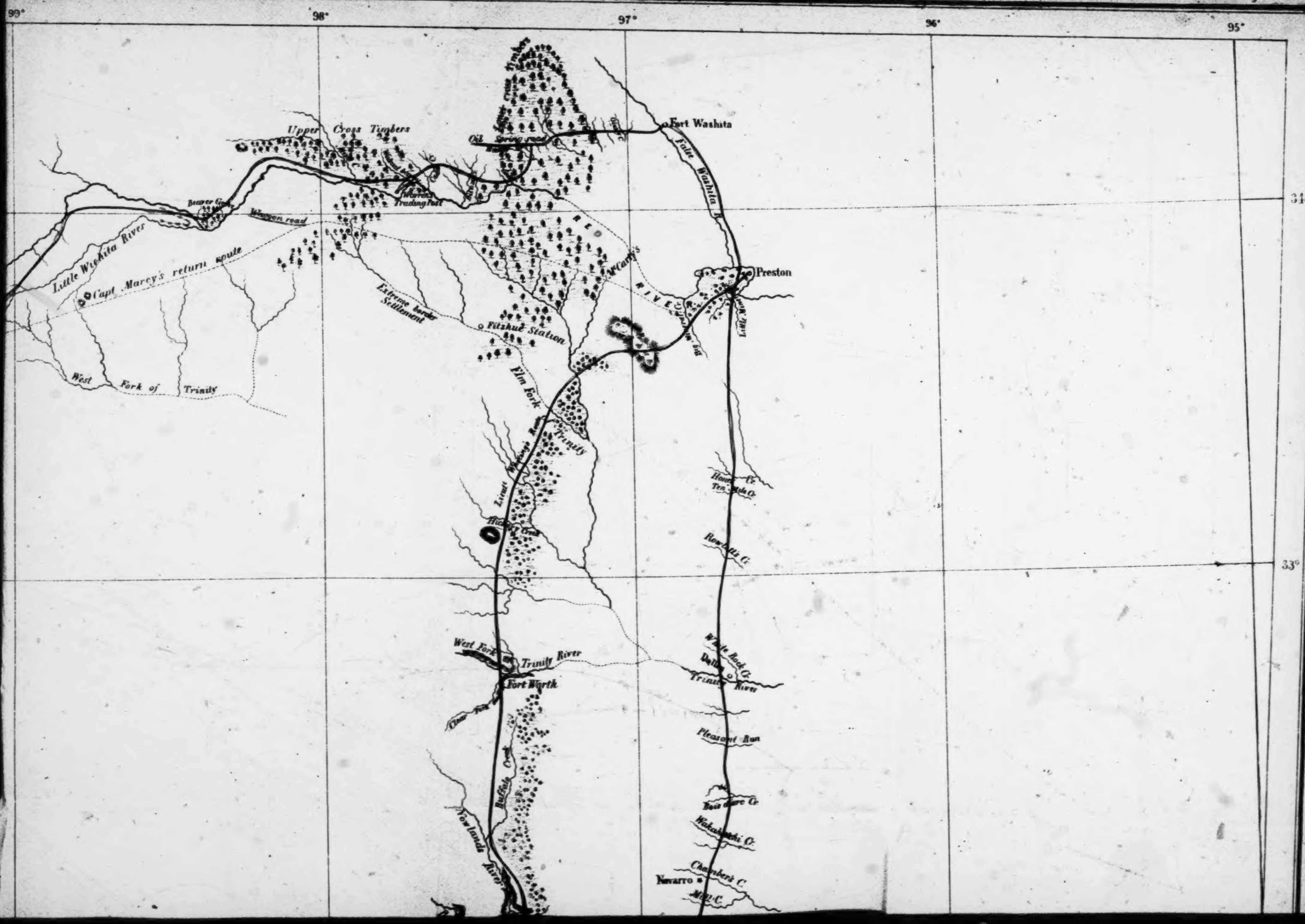
W. H. C. WHITING,
Lieutenant of Engineers.

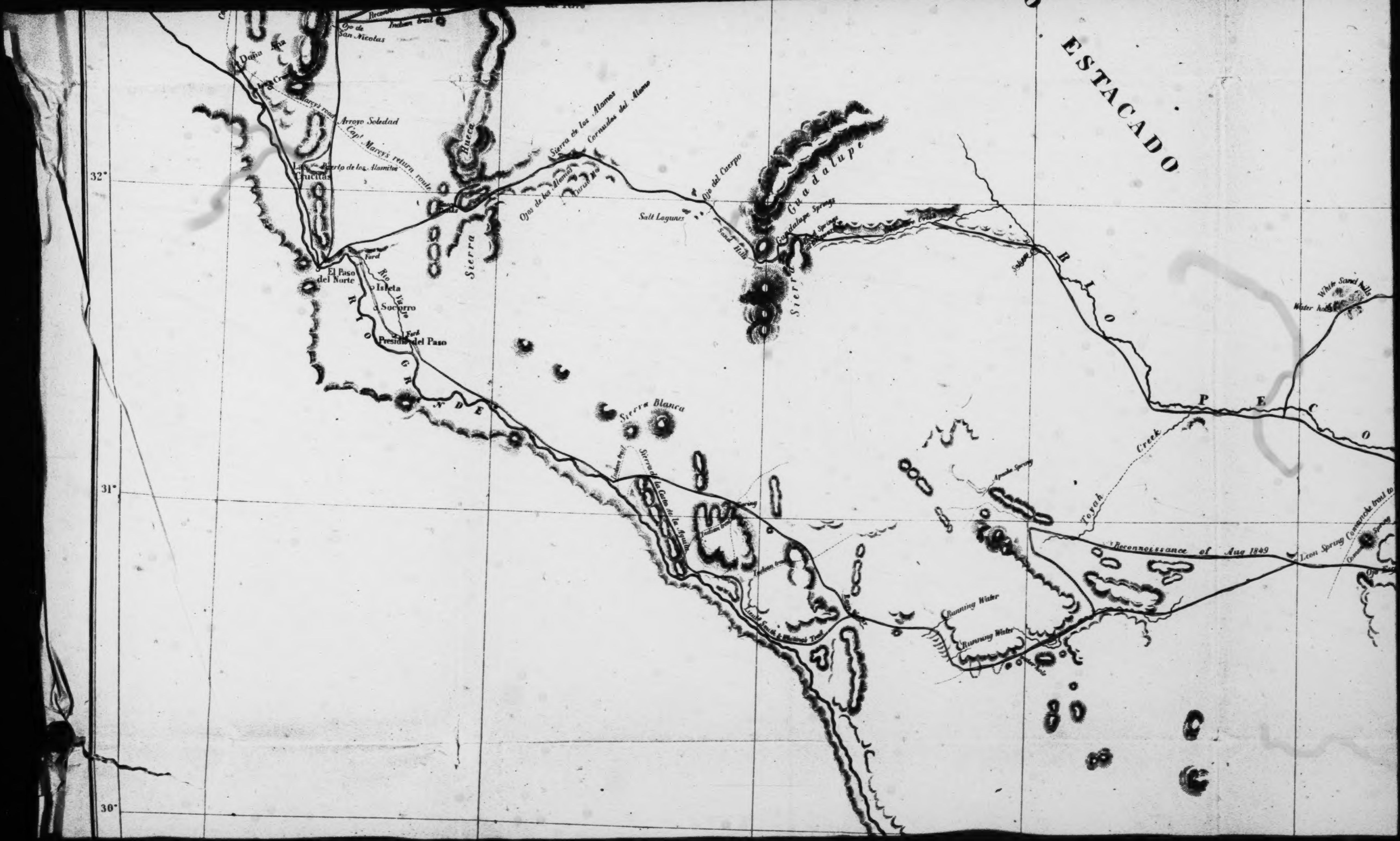
Major GEORGE DEAS,
Assistant Adjutant General Eighth Military Department.

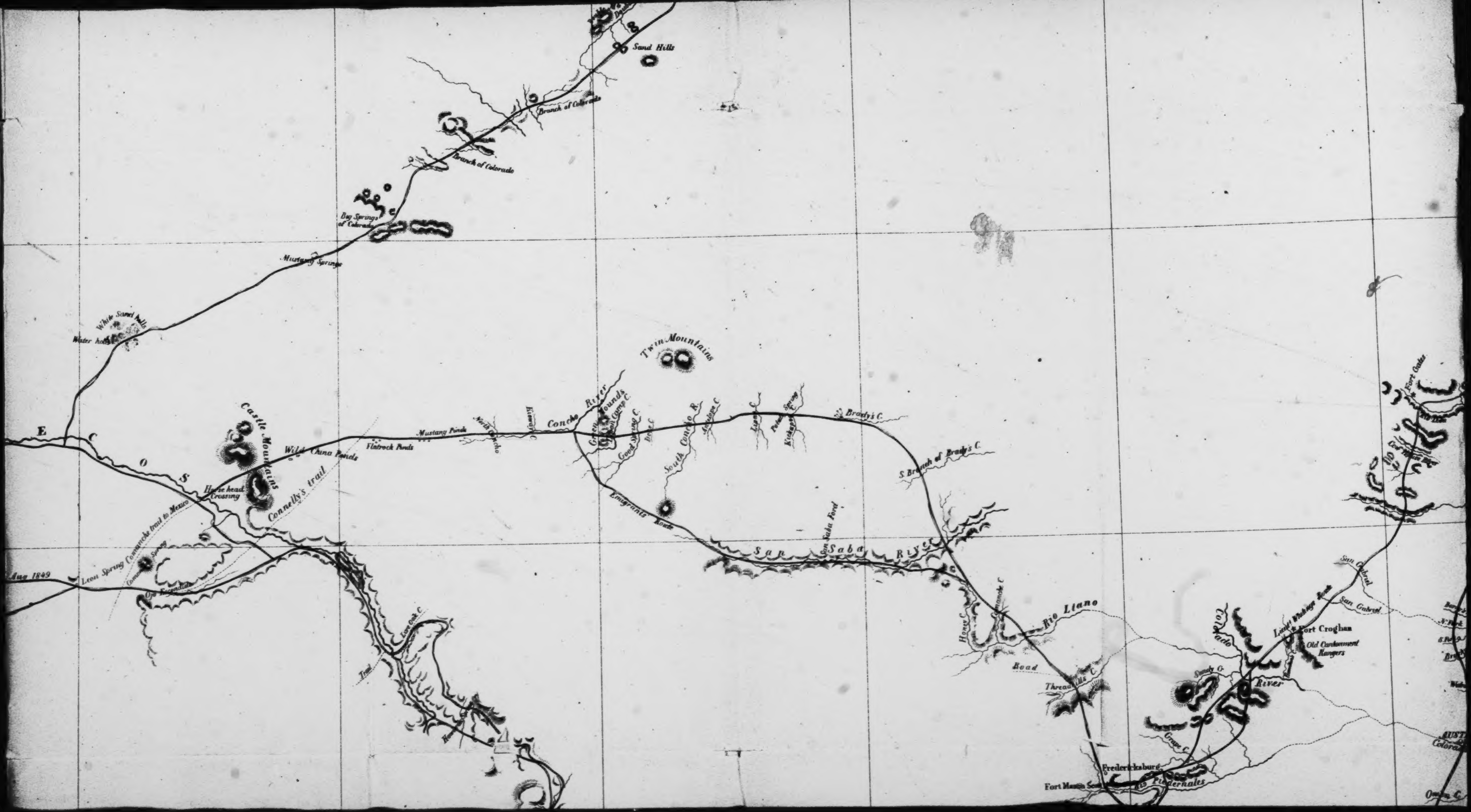

107°
106°
105°
104
103°
34°
33°
32°
Joya de Cebolleta
Joyita
Sabino
Parida
Socorro
Bosquecito
L. Lunas
S. Anto
Don Pedro
Valverde
Fra Cristobal
RIO GRANDE
Sierra de Jumanes
Cerro Redondo
Salina de San Andres
Laguna del Muerto
Jornada del Muerto
Organ Mountains
Capt Marcy's route
Sierra de San Nicolas
Ojo de San Nicolas
Doña Ana
Las Cruces
Sierra Blanca
La Cienega
Salt C.
La Agua de Neustra Senora de la Luz
White Sand Hills
Return Trail
Salt Lake
Reconnoissance of Sept. 1849
Indian trail
Cañon del Perro
Arroyo Soledad
Capt Marcy's return route
Puerto de los Alamitos
Hueca
Sierra de los Alamos
Cornudas del Alamo
Ojo del Cuerpo
adalupe
LLANO ESTACADO

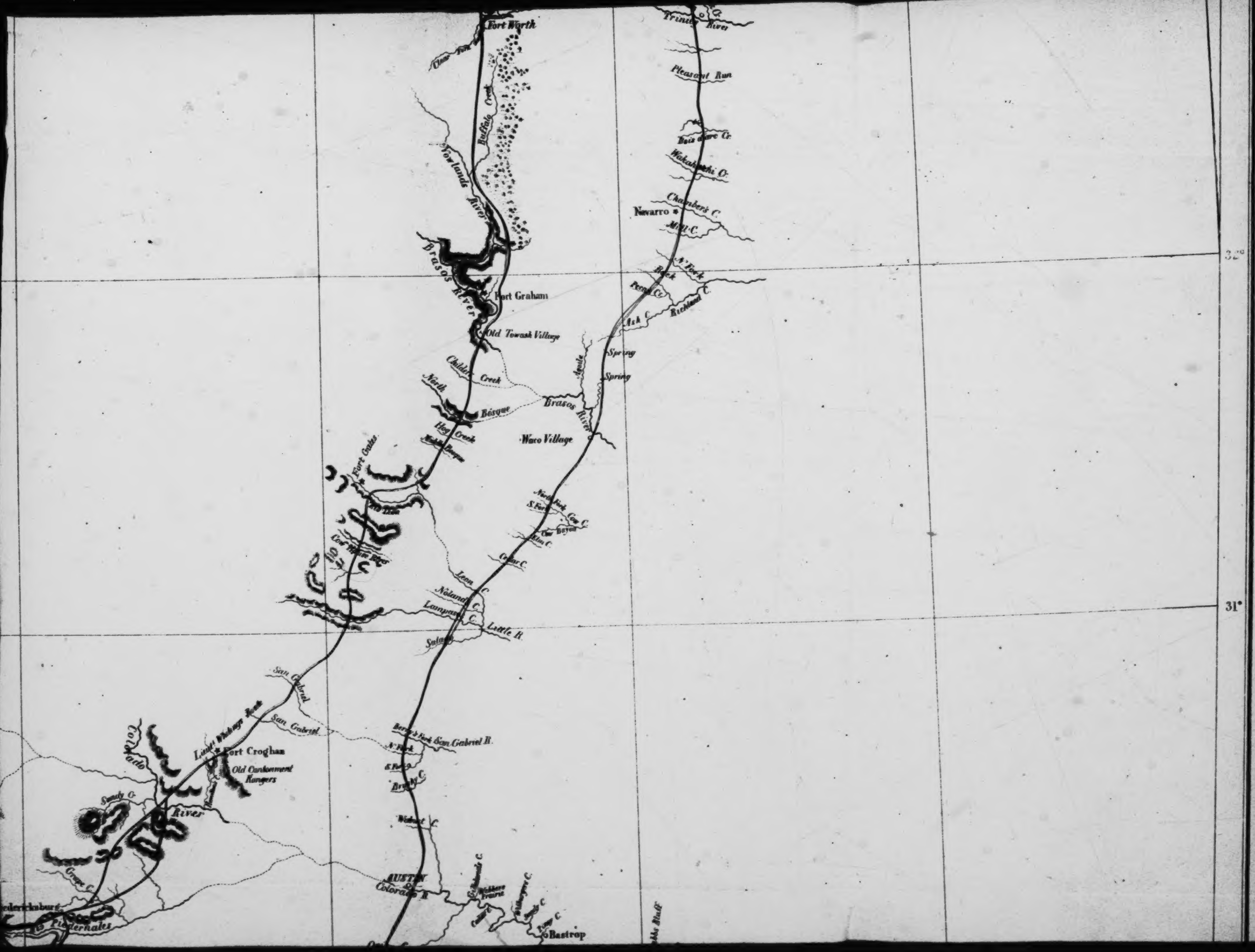

103°
102°
101°
100°
99°
Big Wichita River
Little Wichita River
Beaver Cr.
Wichita r
Capt. Marcy's return route
West Fork of Trinity
Main Fork of Brazos R.
Double Mountain Fork
Branch of Brazos R.
Branches of Clear Fork
Double Mountain Fork of Brazos R.
Sand Hills
Branch of Colorado
Branch of Colorado
Big Springs

Senate Ex: doc: 1st Sess: 31st Cong: No. 64

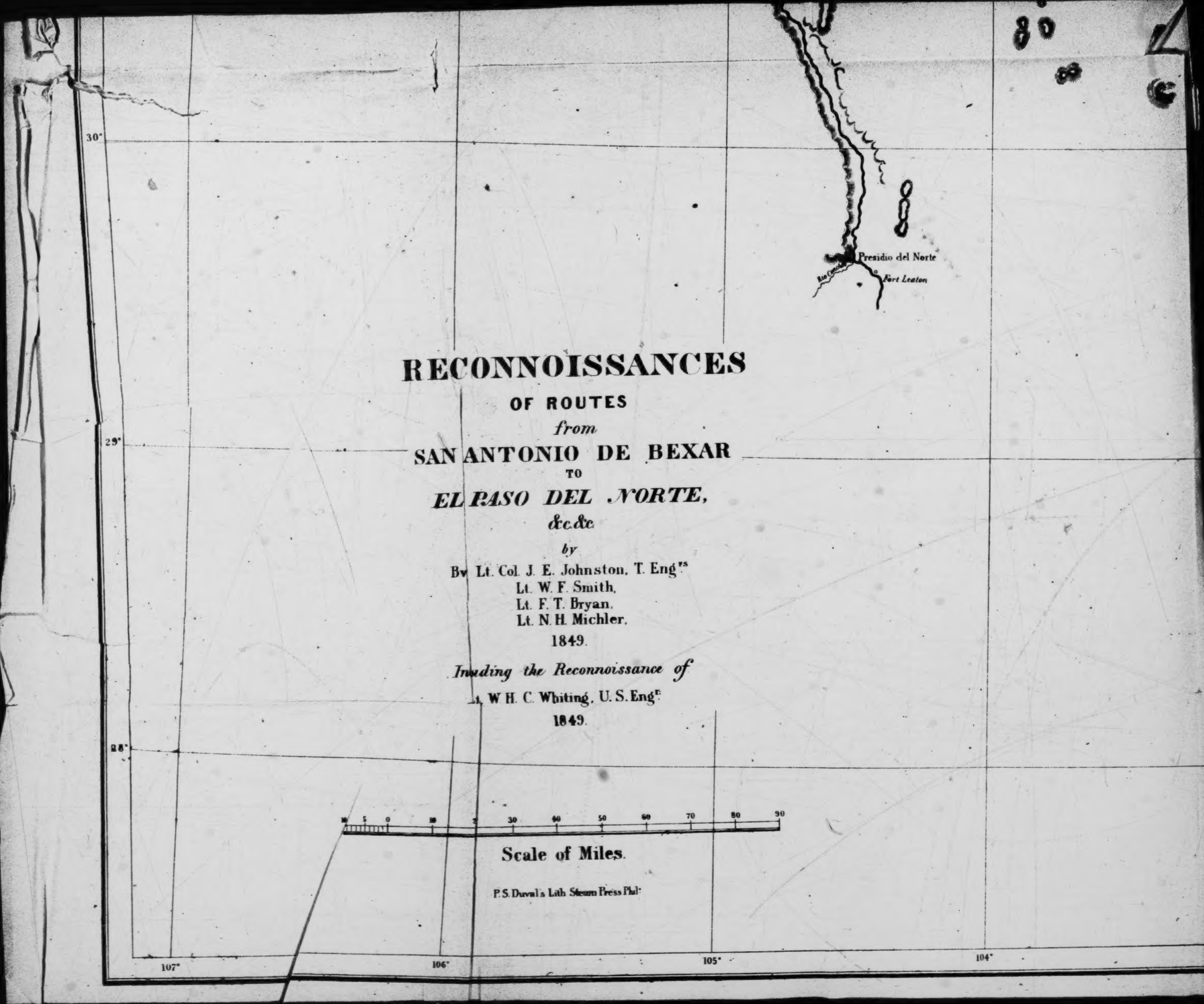

99°
98°
97°
96°
95°
34°
33°
Upper Cross Timbers
Lower Cross Timbers
Oil Spring road
Fort Washita
False Washita R.
Beaver Cr.
Warren's Trading Post
Waggon road
Little Wichita River
Capt. Marcy's return route
RED RIVER
McCarty's
Preston
Extreme border Settlement
Fitzhue Station
West Fork of Trinity
Elm Fork
Trinity
Lieut. Whiting's Route
Hickory Creek
House Cr.
Ten Mile Cr.
Rowlett's Cr.
West Fork
Trinity River
Fort Worth
Clear Fork
White Rock Cr.
Dallas
Trinity River
Pleasant Run
Buffalo Creek
Nowlands River
Bois d'arc Cr.
Wakahachi Cr.
Chambers C.
Navarro
Mill C.

ESTACADO
Indian trail
Ojo de San Nicolas
Doña Ana
Marcy's road
Arroyo Soledad
Capt. Marcy's return route
Las Crucitas
Puerto de los Alamitos
Hueca
Sierra de los Alamos
Cornudas del Alamo
Ojos de los Alamos
Sierra
Ojo del Cuerpo
Salt Lagunes
Sand Hills
Guadalupe
Guadalupe Springs
Sierra
El Paso del Norte
Ford
Rio Viejo
Isleta
Socorro
Ford
Presidio del Paso
RIO GRANDE
Sierra Blanca
Indian trail
Sierra de la Cola de la Aguila
Indian trail
Indian trail
Lieuts Smith & Whiting's Trail
Running Water
Running Water
Apache Spring
Toyah Creek
Reconnoissance of Aug 1849
Leon Spring
Comanche trail to
RIO PECOS
White Sand hills
Water holes
32°
31°
30°


Sand Hills
Branch of Colorado
Branch of Colorado
Big Springs of Colorado
Mustang Springs
White Sand hills
Water holes
E C O S
Castle Mountains
Wild China Ponds
Flatrock Ponds
Mustang Ponds
North Concho
Kiowa C.
Concho River
Green Mounds
Camp C.
Good Spring C.
Dove C.
Twin Mountains
South Concho R.
Antelope C.
Lipan C.
Potato Spring C.
Kickapoo C.
Brady's C.
S. Branch of Brady's C.
Horse head Crossing
Connelly's trail
Comanche trail to Mexico
Leon Spring
Comanche Spring
Ojo Escondido
Aug 1849
Live Oak C.
Trail
Emigrants' Route
San Saba Ford
San Saba River
Honey C.
Comanche C.
Rio Llano
Road
Threadgills C.
Sandy C.
Colorado
River
Grape C.
Fredericksburg
Fort Martin Scott
Rio Piedernales
Lieut. Whiting's Route
Fort Croghan
Old Cantonment Rangers
San Gabriel
San Gabriel
Fort Gates
N. Fork
AUSTIN
Colorado
Onion C.


Fort Worth
Buffalo Creek
Nowlands River
Brasos River
Fort Graham
Old Towash Village
Childers Creek
North Bosque
Hog Creek
Fort Gates
Cow House Bayou
Trinity River
Pleasant Run
Bois d'arc Cr.
Chambers C.
Navarro
Mill C.
N. Fork
Peach Cr.
Richland C.
Ash C.
Spring
Spring
Aquila
Brasos River
Waco Village
North Fork
S. Fork
Cow C.
Elm C.
Cedar C.
Leon C.
Noland C.
Lampasas C.
Little R.
Salado
32°
31°
San Gabriel
San Gabriel
Fort Croghan
Old Cantonment Rangers
Colorado
Sandy C.
River
Grape C.
Fredericksburg
Piedernales
Berry's Fork San Gabriel R.
N. Fork
S. Fork
Brushy C.
Walnut C.
AUSTIN
Colorado R.
Bastrop
Gibbs Bluff

80


30°
29°
28°
107°
106°
105°
104°
Presidio del Norte
Rio Conchos
Fort Leaton
10 5 0 10 20 30 40 50 60 70 80 90

RECONNOISSANCES
OF ROUTES
from
SAN ANTONIO DE BEXAR
TO
EL PASO DEL NORTE,
&c. &c.

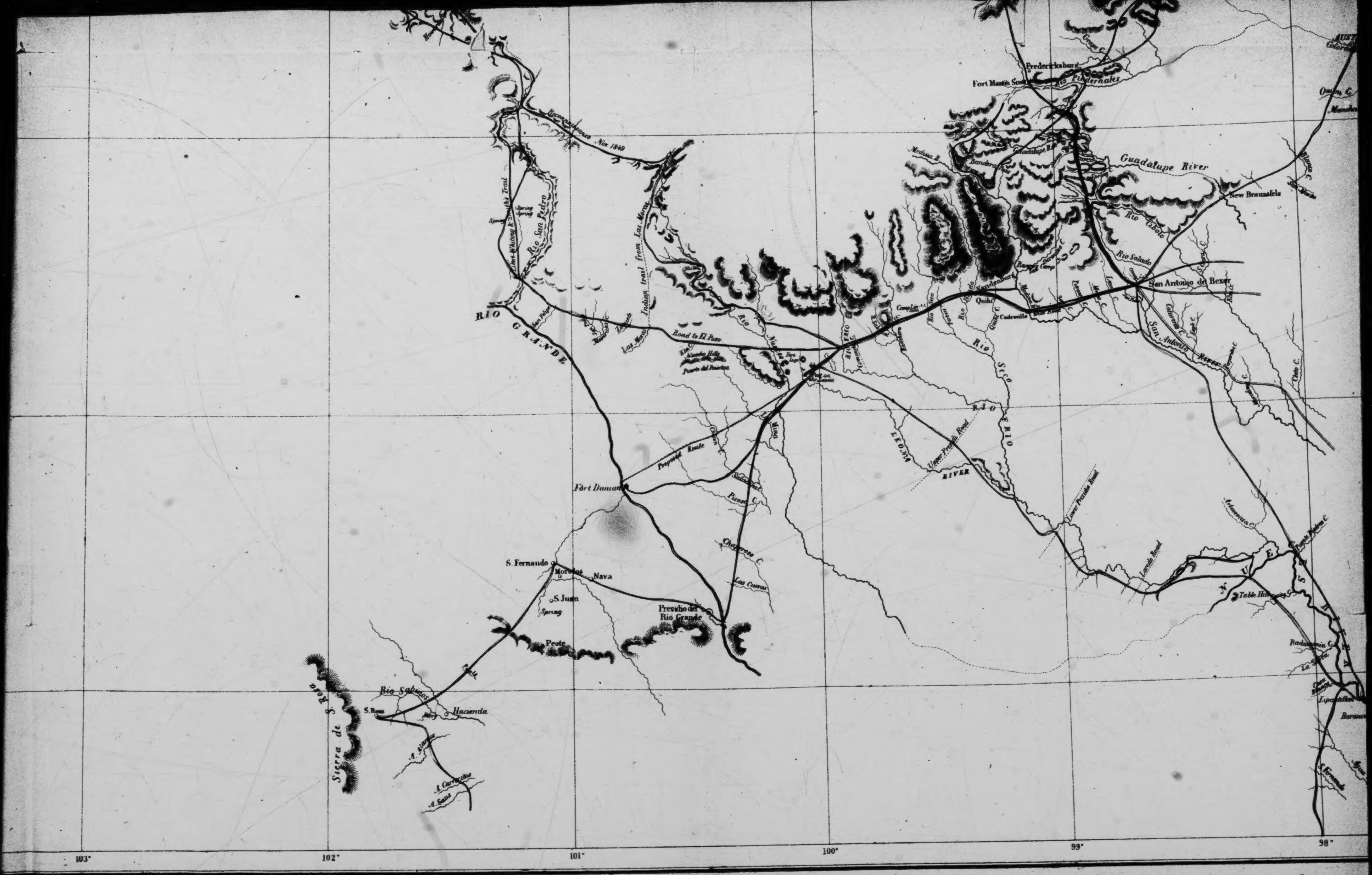
by

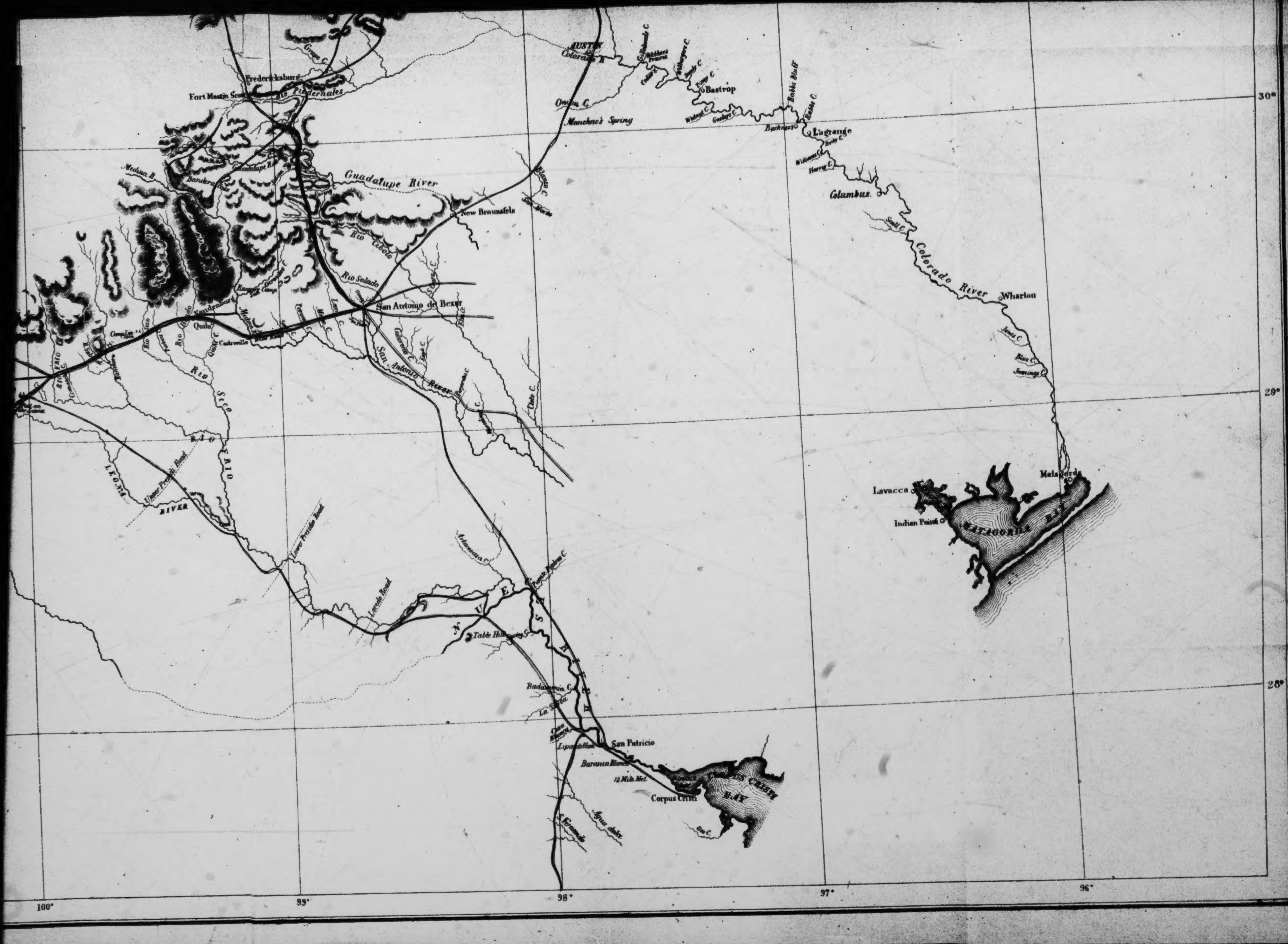
Bv. Lt. Col. J. E. Johnston, T. Engrs.
Lt. W. F. Smith,
Lt. F. T. Bryan,
Lt. N. H. Michler,
1849.

Including the Reconnoissance of
Lt. W. H. C. Whiting, U. S. Engr.
1849.

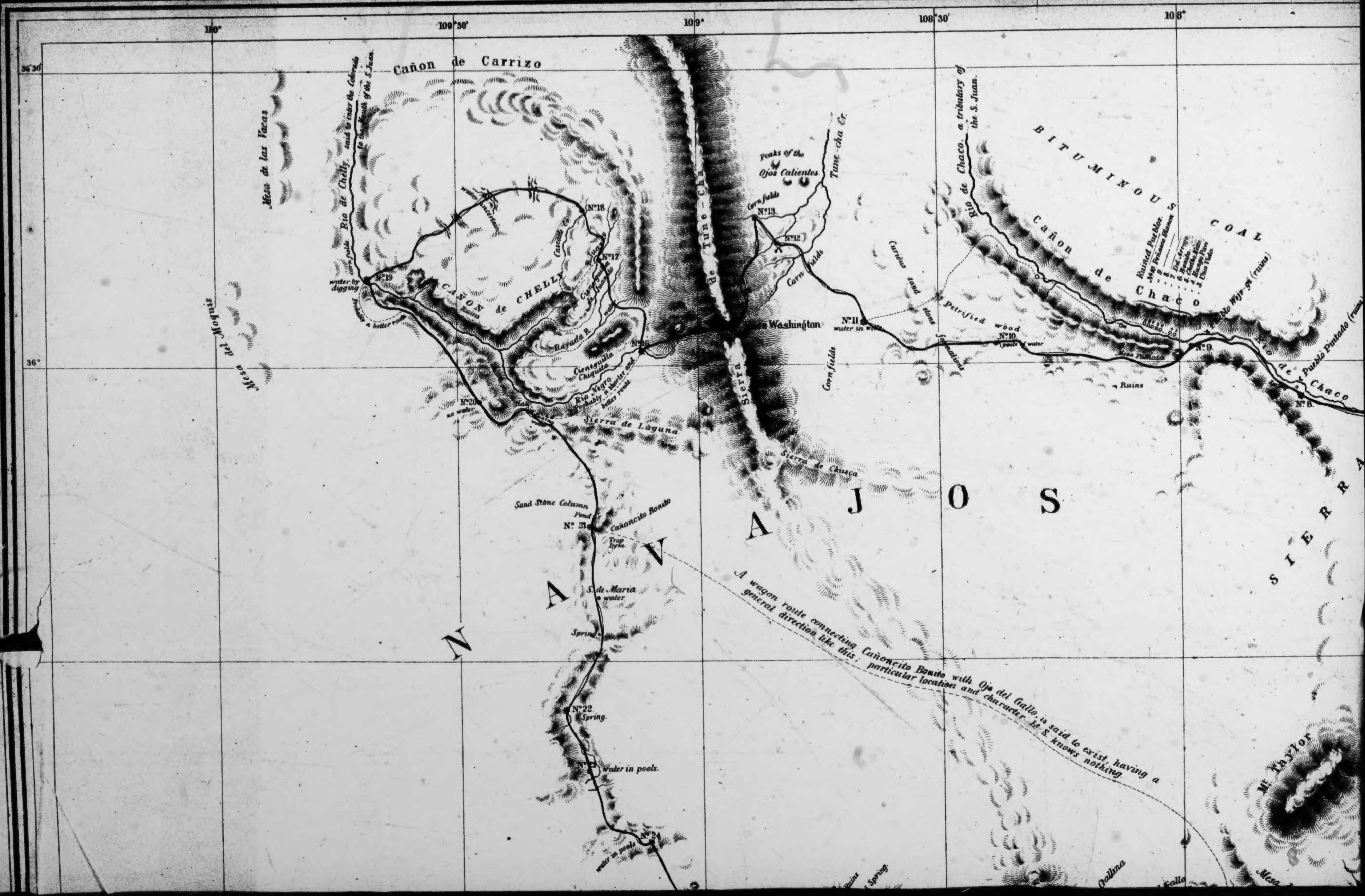
Scale of Miles.

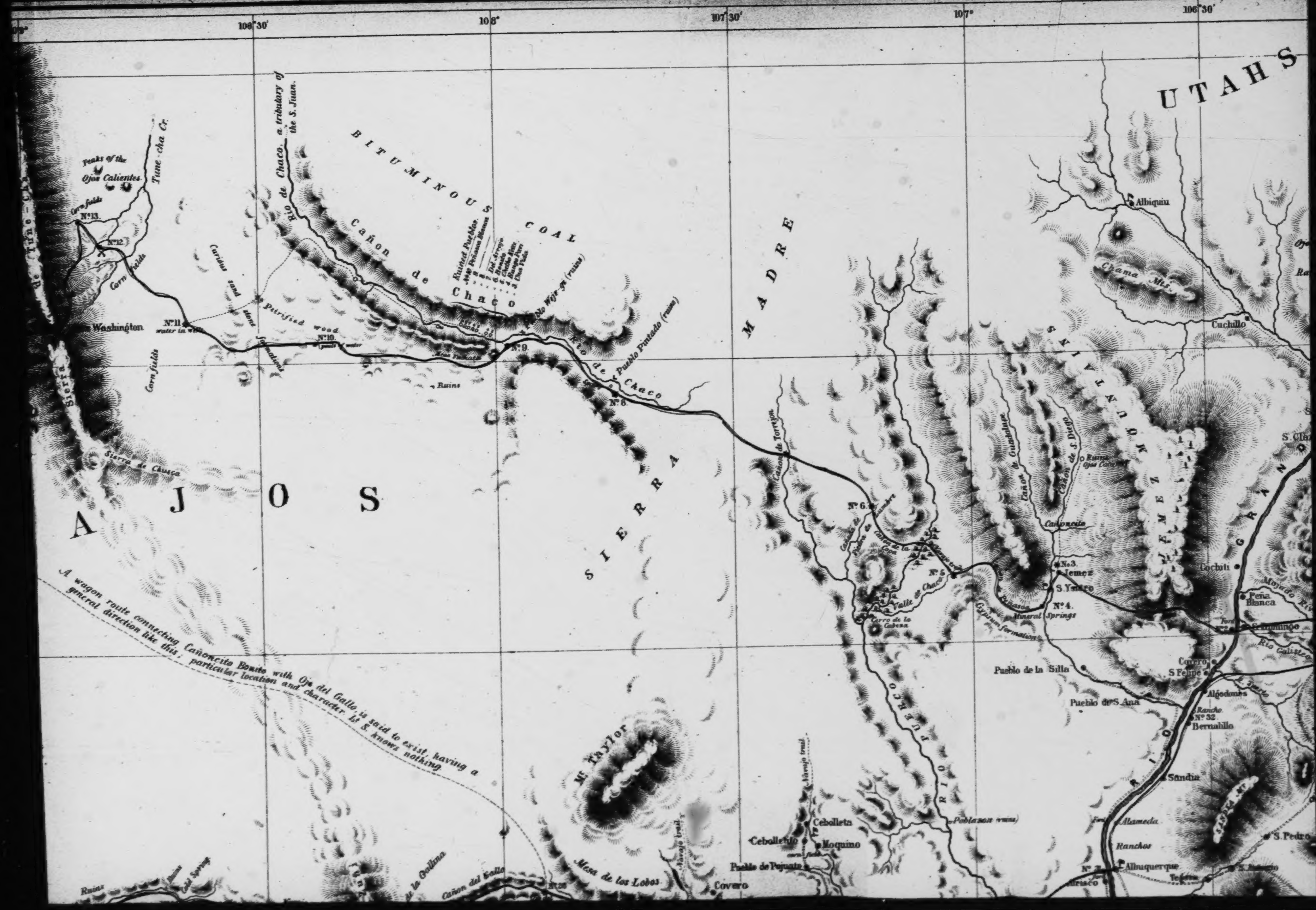
P. S. Duval's Lith. Steam Press Phil.

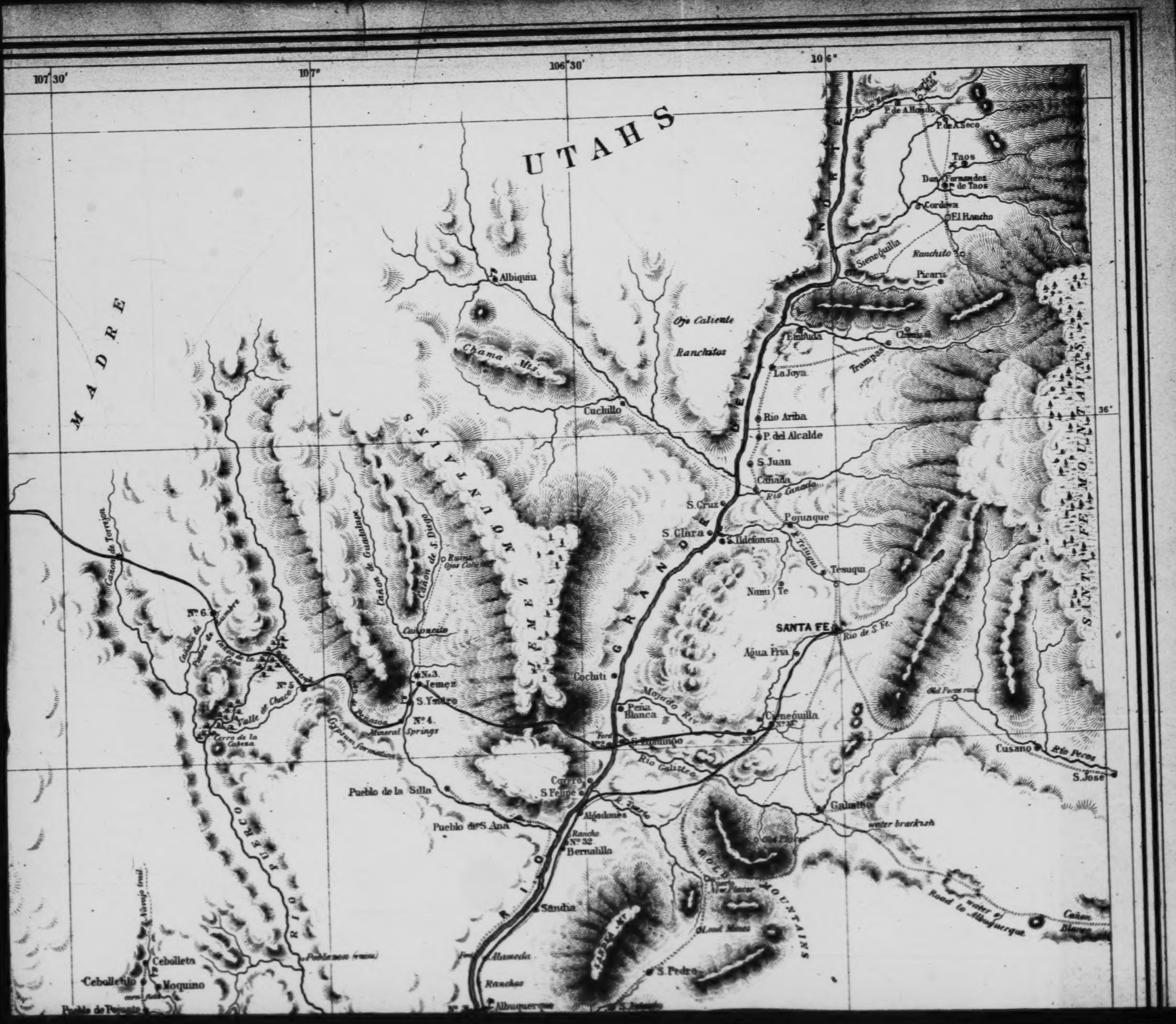

Fredericksburg
Fort Martin Scott
Rio Piedernales
Grape C.
AUSTIN
Colorado
Onion C.
Guadalupe River
Guadalupe R.
Medina R.
Bandera Pass
New Braunsfels
Blanco C.
San Marcos
Rio Cibolo
Rio Salado
San Antonio de Bexar
Vandenburg
Quihi
Castroville
Rio Hondo
Rio Seco
Quihi C.
Medina R.
San Antonio River
Calaveras C.
Cibolo C.
Reconnaissance Nov. 1849
Lieut. Whiting & Smith's Trail
Spring
Rio San Pedro
Indian trail from Las Moras
RIO GRANDE
San Felipe
Las Moras
Road to El Paso
Rio Nueces
Fort Inge
Rio Frio
Comanche C.
Leona
Puerto del Paisano
Mina
Proposed Route
Fort Duncan
Salado
Picoso C.
Chaparroso C.
Las Cuevas
Upper Presidio Road
Lower Presidio Road
RIO FRIO
LEONA RIVER
Laredo Road
Arlacosa C.
NUECES RIVER
Table Hill
Badamaria C.
La Sacta
Lipantitlan
Baranca
S. Fernando
S. Fernando
Morelos
Nava
S. Juan
Spring
Presidio del Rio Grande
Peote
Rio Sabinos
S. Rosa
Hacienda
Sierra de S. Rosa
A. Alamos
A. Carrecitos
A. Sauz
103°
102°
101°
100°
99°
98°

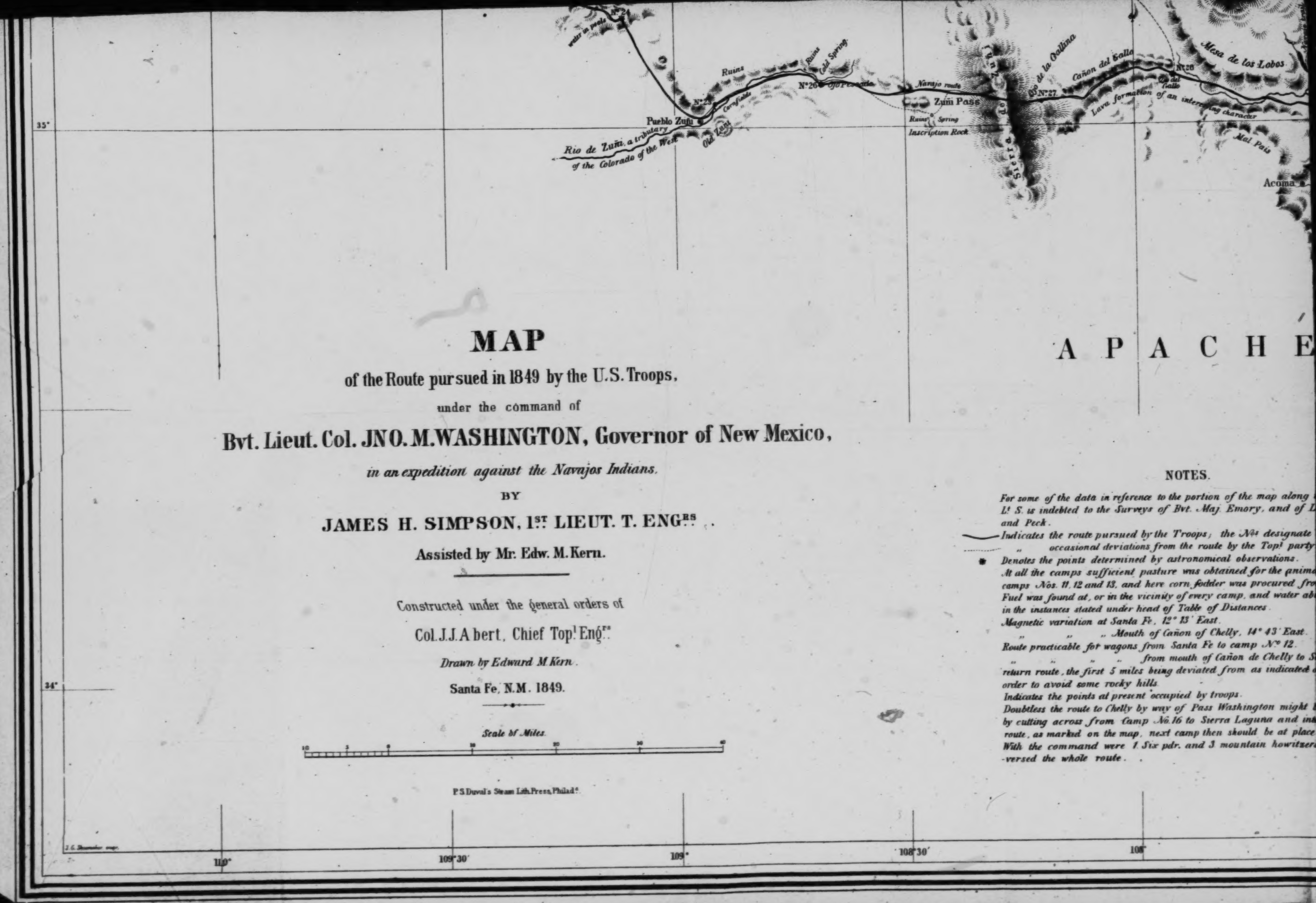


AUSTIN
Colorado R
Fredericksburg
Fort Martin Scott
Rio Piedernales
Onion C.
Manchac's Spring
Bastrop
Rabbs Bluff
Rabbs C.
Lagrange
Columbus
Colorado River
Wharton
Jones C.
Blue C.
Jennings C.
Medina R.
Bandera Pass
Guadalupe R.
Guadalupe River
New Braunfels
Blanco C.
San Marcos
Rio Cibolo
Rio Salado
San Antonio de Bexar
Vandenburg
Quihi
Castroville
Rio Seco
Rio Hondo
San Antonio River
Cibolo C.
Ecleto C.
Rio Frio
Leona River
Upper Presidio Road
Lower Presidio Road
Laredo Road
Atascosa C.
Nueces River
Table Hill
Radamenia C.
La Sorta
San Patricio
Lipantitlan
Barranca Blanca
12 Mile Mot.
Corpus Christi
Corpus Christi Bay
Agua dulce
S. Fernando
Lavacca
Indian Point
Matagorda
Matagorda Bay
30°
29°
28°
100°
99°
98°
97°
96°


110°
109°30'
109°
108°30'
108°
36°30'
36°
Cañon de Carrizo
Mesa de las Vacas
Mesa del Moquis
Rio de Chelly. said to enter the Colorado to the South of the S. Juan.
corn fields
water by digging
No 19
Probably a better route
CAÑON de CHELLY
Ruins
water uncertain
No 18
Cascade Cr.
R. Juan
No 17
Cieneguilla de Juan
water
Rayada R.
No 16
Cieneguilla Chiquito
Rio Negro
Probably a shorter and better route
No 20
no water
Halt
Sierra de Laguna
Sierra de Tune-Cha
Peaks of the Ojos Calientes.
Tune-cha Cr.
Corn fields
No 13.
No 12.
Corn fields
Washington
No 11
water in wells
Corn fields
Curious sand stone formations
Petrified wood
No 10.
pools of water
Rio de Chaco. a tributary of the S. Juan.
BITUMINOUS COAL
Cañon de Chaco
Ruined Pueblos.
No 10 Peñasca Blanca
9
8
7 Del Arroyo
6 Bonito
5 Chetho Kette
4 Hungo Pavi
3 Una Vida
Pueblo Weje-gi (ruins)
Mesa Fachada
No 9.
Rio de Chaco
Pueblo Pintado (ruins)
No 8.
Ruins
Sierra de Chusca
NAVAJOS
SIERRA
Sand Stone Column
Pond
No 21
Cañoncito Bonito
Trap Dyke
S. de Maria
water
Spring
No 22
Spring.
water in pools.
No 24
water in pools
A wagon route connecting Cañoncito Bonito with Ojo del Gallo, is said to exist, having a general direction like this: particular location and character Lt S. knows nothing.
Mt Taylor
Mesa
Bollina
Ruins
Spring
Gallo


108°30'
108°
107°30'
107°
106°30'
UTAHS
Tune-cha Cr.
Peaks of the Ojos Calientes
Corn fields
No.13
No.12
Corn fields
Sierra de Tune-cha
Washington
No.11 water in wells
Curious sand stone formations
Petrified wood
No.10 pools of water
Corn fields
Ruins
Rio de Chaco, a tributary of the S. Juan.
BITUMINOUS COAL
Cañon de Chaco
Ruined Pueblos
No.9
Pueblo Wije-ge (ruins)
Rio de Pueblo Pintado (ruins)
Rio de Chaco
No.8
SIERRA MADRE
Sierra
Sierra de Chusca
A J O S
A wagon route connecting Cañoncito Bonito with Ojo del Gallo, is said to exist, having a general direction like this; particular location and character Lt. S. knows nothing.
Mt. Taylor
Albiquiu
Chama Mts.
Cuchillo
JEMEZ MOUNTAINS
Cañon de Guadalupe
Cañon de S. Diego
Ruins Ojos Calientes
Cañoncito
No.3
Jemez
S. Ysidro
No.4
Mineral Springs
Gypsum formation
Peñasco
No.5
Valle de Chaco
No.6
Cañon de Torrejon
Cerro de la Cabeza
RIO PUERCO
Poblazon (ruins)
Navajo trail
Cebolleta
Cebolletita
Moquino
Pueblo de Pojuate
Covero
Mesa de los Lobos
Cañon del Gallo
la Gallina
Ruins
Cold Spring
Cochiti
Peña Blanca
S. Domingo
Rio Galisteo
Covero
S. Felipe
Algodones
Rancho
No.32
Bernalillo
Pueblo de la Silla
Pueblo de S. Ana
Sandia
Sandia Mt.
Alameda
Ranchos
Albuquerque
Atrisco
S. Pedro
S. Antonio
Tejeras
RIO GRANDE
S. Clara


107°30'
107°
106°30'
106°
36°
UTAHS
MADRE
Albiquiu
Chama Mts.
Cuchillo
Ojo Caliente
Ranchitos
RIO GRANDE DEL NORTE
P. de A. Hondo
P. de A. Seco
Taos
Don Fernandez de Taos
Cordova
El Rancho
Sieneguilla
Ranchito
Picuris
Embuda
Chamisal
Trampas
La Joya
Rio Ariba
P. del Alcalde
S. Juan
Canada
Rio Canada
S. Cruz
S. Clara
S. Ildefonsia
Pojuaque
Tesuque
Nambe
SANTA FE
Rio de S. Fe
Agua Fria
SANTA FE MOUNTAINS
JEMEZ MOUNTAINS
Cañon de Torrejon
No. 6
Cañon de Guadalupe
Cañon de S. Diego
Ruins Ojos Calientes
Cañoncito
Cañon de la Copa
Valle et Chaco
No. 5
No. 3
Jemez
S. Ysidro
No. 4
Mineral Springs
Gypsum formation
Cerro de la Cabeza
Cochiti
Peña Blanca
Mojado Riv.
Cieneguilla
No. 35
No. 1
Fort No. 2
S. Domingo
Rio Galisteo
Cusano
Rio Pecos
S. Jose
Old Pecos ruins
Galisteo
water brackish
Old Placer
New Placer
Lead Mines
GOLD MOUNTAINS
Road to Albuquerque
water
Cañon Blanco
Pueblo de la Silla
Pueblo de S. Ana
Cotero
S. Felipe
Algodones
Rancho No. 32
Bernalillo
Sandia
SANDIA Mt.
S. Pedro
Alameda
Ranchos
Albuquerque
RIO PUERCO
Poblazon (ruins)
Naranjo trail
Cebolleta
Cebolletito
Moquino
Pueblo de Pojuate


water in pools
N.° 24
Ruins
Ruins
Cold Spring
N.° 25
Cornfields
N.° 26
Ojo Pescado
Pueblo Zuñi
Old Zuñi
Rio de Zuñi, a tributary of the Colorado of the West
Navajo route
Zuñi Pass
Ruins
Spring
Inscription Rock
Sierra de Zuñi
Ojo de la Gallina
N.° 27.
Cañon del Gallo
Ojo del Gallo
N.° 28
Lava formation of an interesting character
Mesa de los Lobos
Mal Pais
Acoma
A P A C H E
35°
34°
110°
109°30′
109°
108°30′
108°
J. G. Bruff engr.

MAP

of the Route pursued in 1849 by the U.S. Troops,

under the command of

Bvt. Lieut. Col. JNO. M. WASHINGTON, Governor of New Mexico,

in an expedition against the Navajos Indians.

BY

JAMES H. SIMPSON, 1ST LIEUT. T. ENGRS.

Assisted by Mr. Edw. M. Kern.

Constructed under the general orders of

Col. J. J. Abert, Chief Top.l Eng.rs

Drawn by Edward M. Kern.

Santa Fe, N.M. 1849.

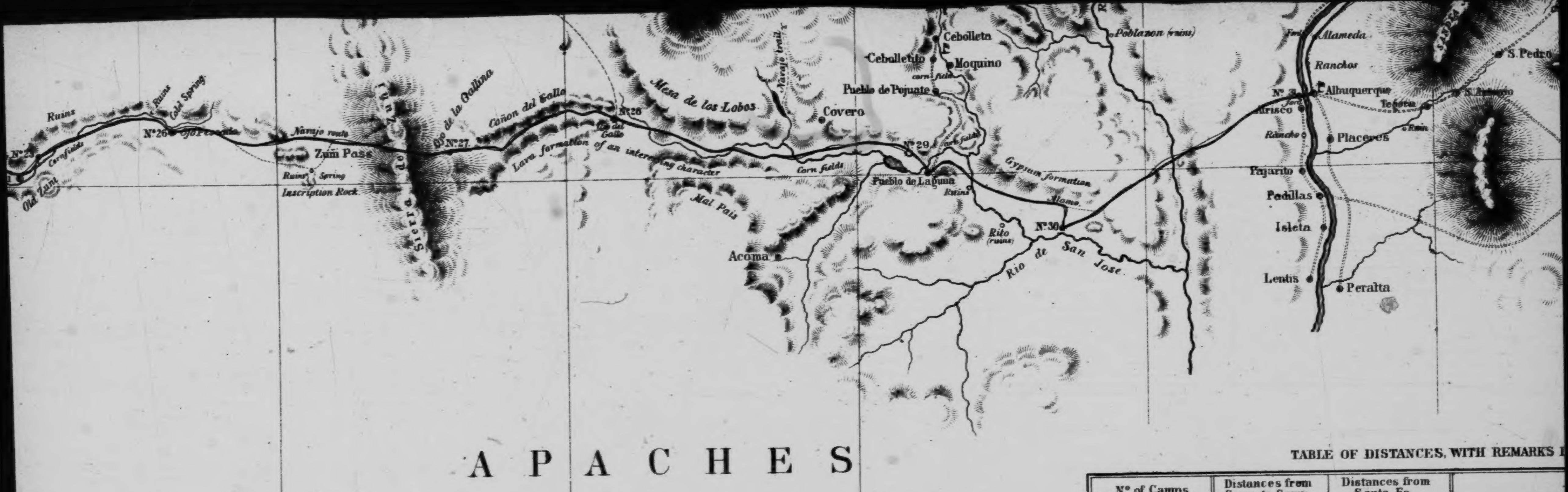
Scale of Miles.

10 5 0 10 20 30 40

P. S. Duval's Steam Lith. Press, Philad.a

NOTES.

For some of the data in reference to the portion of the map along
L.t S. is indebted to the Surveys of Bvt. Maj. Emory, and of D
and Peck.
Indicates the route pursued by the Troops; the N.os designate
" occasional deviations from the route by the Top.l party
Denotes the points determined by astronomical observations.
At all the camps sufficient pasture was obtained for the anima
camps Nos. 11, 12 and 13, and here corn fodder was procured fro
Fuel was found at, or in the vicinity of every camp, and water ab
in the instances stated under head of Table of Distances.
Magnetic variation at Santa Fe, 12° 13′ East.
" " " Mouth of Cañon of Chelly, 14° 43′ East.
Route practicable for wagons from Santa Fe to camp N.o 12.
" " " " from mouth of Cañon de Chelly to S
return route, the first 5 miles being deviated from as indicated
order to avoid some rocky hills.
Indicates the points at present occupied by troops.
Doubtless the route to Chelly by way of Pass Washington might
by cutting across from Camp N.o 16 to Sierra Laguna and int
route, as marked on the map, next camp then should be at place
With the command were 1 Six pdr. and 3 mountain howitzers,
-versed the whole route.


Ruins
Cold Spring
Ruins
N.º 25
Cornfields
N.º 26
Ojo Pescado
Old Zuñi
Narajo route
Zuñi Pass
Ruins
Spring
Inscription Rock
Sierra de Zuñi
Dº de la Gallina
Nº 27
Cañon del Gallo
Ojo del Gallo
Lava formation of an interesting character
Nº 28
Mesa de los Lobos
Navajo trail
Mal Pais
Covero
Cebolleta
Cebolletito
Moquino
corn fields
Pueblo de Pojuate
Nº 29
Corn fields
corn fields
Pueblo de Laguna
Ruins
Gypsum formation
Alamo
Acoma
Rito (ruins)
Nº 30
Rio de San Jose
Poblazon (ruins)
Alameda
Ranchos
Nº 31
Albuquerque
Atrisco
Rancho
Placeres
Pajarito
Padillas
Isleta
Lentis
Peralta
Tejona
S. Pedro
S. Antonio
APACHES

of New Mexico,

NOTES.

For some of the data in reference to the portion of the map along the Rio Grande, Lt S. is indebted to the Surveys of Bvt. Maj. Emory, and of Lieut's. Abert and Peck.

—— Indicates the route pursued by the Troops; the Nos designate the Camps.

.... " occasional deviations from the route by the Topl party.

● Denotes the points determined by astronomical observations.

At all the camps sufficient pasture was obtained for the animals, except at camps Nos. 11, 12 and 13, and here corn fodder was procured from the Navajos.

Fuel was found at, or in the vicinity of every camp, and water abundantly, except in the instances stated under head of Table of Distances.

Magnetic variation at Santa Fe, 12° 13′ East.

" " " Mouth of Cañon of Chelly, 14° 43′ East.

Route practicable for wagons from Santa Fe to camp Nº 12.

" " " " from mouth of Cañon de Chelly to Santa Fe by return route, the first 5 miles being deviated from as indicated on the map, in order to avoid some rocky hills.

Indicates the points at present occupied by troops.

Doubtless the route to Chelly by way of Pass Washington might be shortened by cutting across from Camp No. 16 to Sierra Laguna and intersecting return route, as marked on the map, next camp then should be at place marked "Halt".

With the command were 1. Six pdr. and 3 mountain howitzers, which traversed the whole route.

TABLE OF DISTANCES, WITH REMARKS

Nº of Camps.		Distances from Camp to Camp.		Distances from Santa Fe.		
Camp.	*Nº 1*		*Miles.*	*16.02*	*Miles.*	
"	*" 2*	*14.85*	*"*	*30.87*	*"*	
Near Jemez.	*" 3*	*26.60*	*"*	*57.47.*	*"*	
Camp.	*" 4*	*5.78*	*"*	*63.25*	*"*	
"	*" 5*	*76.27*	*"*	*79.52*	*"*	*Water only to be*
"	*" 6*	*13.27*	*"*	*92.79*	*"*	
"	*" 7*	*13.55*	*"*	*106.34*	*"*	
"	*" 8*	*21.45*	*"*	*127.79*	*"*	
"	*" 9*	*14.86*	*"*	*142.65*	*"*	
"	*" 10*	*24.53*	*"*	*167.18*	*"*	
"	*" 11*	*14.60*	*"*	*181.78*	*"*	
Tune - Cha.	*" 12*	*17.21*	*"*	*198.99*	*"*	
Camp.	*" 13*	*4.32*	*"*	*203.31.*		*This Camp is unne*
"	*" 14*	*10.00*	*"*	*213.31*	*"*	
"	*" 15*	*6.00*	*"*	*219.31*	*"*	
"	*" 16*	*12.00*	*"*	*231.31*	*"*	
"	*" 17*	*13.43*	*"*	*244.74*	*"*	
"	*" 18*	*7.39*	*"*	*253.13*	*"*	
Cañon de Chelly.	*" 19*	*26.45*	*"*	*278.58*	*"*	*Water got by dig*
Camp.	*" 20*	*20.50*	*"*	*299.08*	*"*	*No water at this c*
"	*" 21*	*24.83*	*"*	*323.91*	*"*	
"	*" 22*	*23.02*	*"*	*346.93*	*"*	
"	*" 23*	*8.29*	*"*	*355.22*	*"*	*Water in pools*
"	*" 24*	*12.08*	*"*	*367.30*	*"*	
Near Zuñi.	*" 25*	*17.45*	*"*	*384.75*	*"*	
Camp.	*" 26*	*13.71*	*"*	*398.46*	*"*	
"	*" 27*	*27.14*	*"*	*425.60*	*"*	
"	*" 28*	*18.49*	*"*	*443.09*	*"*	
Near Laguna.	*" 29*	*28.93*	*"*	*472.02*	*"*	
Camp.	*" 30*	*18.51*	*"*	*491.53*	*"*	*Water uncertain*
Albuquerque.	*" 31*	*28.33*	*"*	*519.86*	*"*	
Camp.	*" 32*	*20.70*	*"*	*540.56*	*"*	
Delgados.	*" 33*	*30.75*	*"*	*571.31*	*"*	
Santa Fe.		*15.80*	*"*	*587.11*	*"*	

108°30′ 108° 107°30′ 107° 106°30′

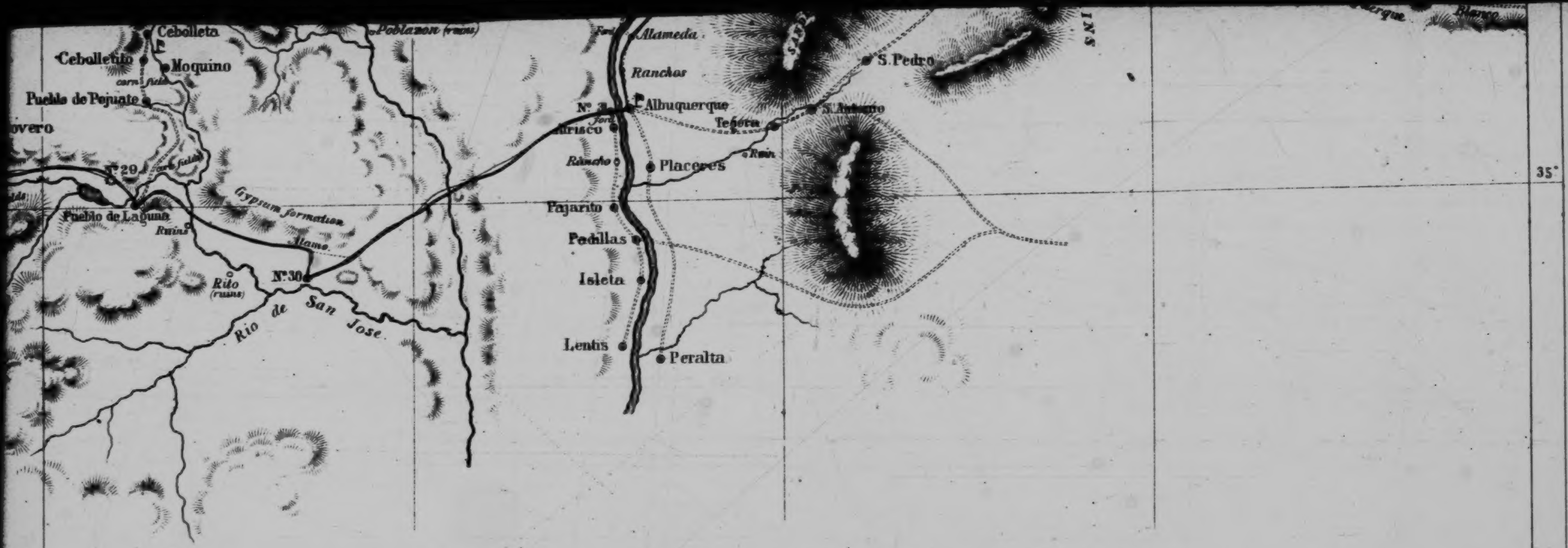

Cebolleta
Cebolletito
Moquino
Pueblo de Pojuate
corn fields
overo
Nº 29
corn fields
Pueblo de Laguna
Ruins
Gypsum formation
Alamo
Nº 30
Rito (ruins)
Rio de San Jose
Poblazon (ruins)
Alameda
Ranchos
Nº 31
Albuquerque
Atrisco
Rancho
Placeres
Pajarito
Padillas
Isleta
Lentis
Peralta
Tejeras
Ruin
S. Pedro
S. Antonio
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TABLE OF DISTANCES, WITH REMARKS IN RELATION TO THE ROUTE.

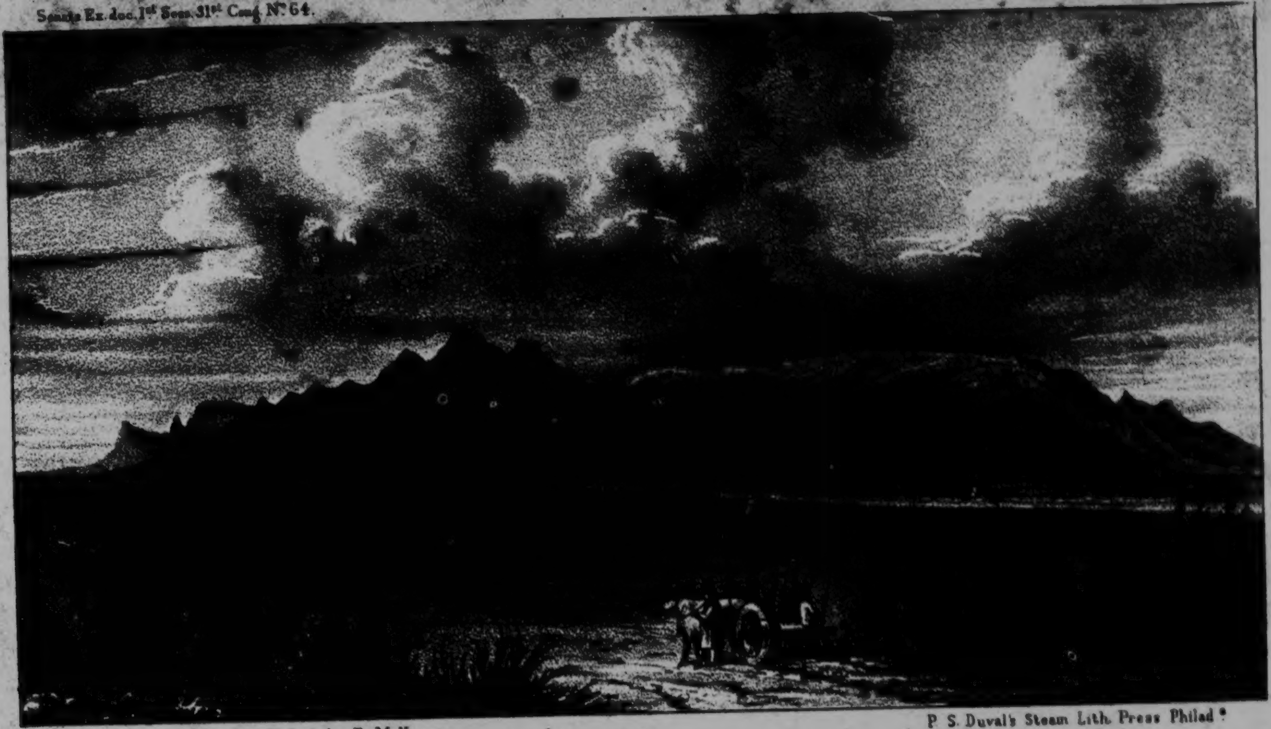
Nº of Camps.		Distances from Camp to Camp.	Distances from Santa Fe.	Remarks.
Camp.	*Nº 1*	*Miles.*	*16.02 Miles.*	
„	*„ 2*	*14.85 „*	*30.87 „*	
Near Jemez.	*„ 3*	*26.60 „*	*57.47 „*	
Camp	*„ 4*	*5.78 „*	*63.25 „*	
„	*„ 5*	*76.27 „*	*79.52 „*	*Water only to be depended on during the wet Season.*
„	*„ 6*	*13.27 „*	*92.79 „*	*do.*
„	*„ 7*	*13.55 „*	*106.34 „*	*do.*
„	*„ 8*	*21.45 „*	*127.79 „*	
„	*„ 9*	*14.86 „*	*142.65 „*	*do*
„	*„ 10*	*24.53 „*	*167.18 „*	*do*
„	*„ 11*	*14.60 „*	*181.78 „*	*do*
Tune - Cha.	*„ 12*	*17.21 „*	*198.99 „*	
Camp.	*„ 13*	*4.32 „*	*203.31 „*	*This Camp is unnecessary, a more direct route to camp 14 from camp 12 is attainable.*
„	*„ 14*	*10.00 „*	*213.31 „*	
„	*„ 15*	*6.00 „*	*219.31 „*	
„	*„ 16*	*12.00 „*	*231.31 „*	
„	*„ 17*	*13.43 „*	*244.74 „*	
„	*„ 18*	*7.39 „*	*253.13 „*	
Cañon de Chelly.	*„ 19*	*26.45 „*	*278.58 „*	*Water got by digging*
Camp.	*„ 20*	*20.50 „*	*299.08 „*	*No water at this camp... can be found 7 miles farther.*
„	*„ 21*	*24.83 „*	*323.91 „*	
„	*„ 22*	*23.02 „*	*346.93 „*	
„	*„ 23*	*8.29 „*	*355.22 „*	*Water in pools — uncertain.*
„	*„ 24*	*12.08 „*	*367.30 „*	*do*
Near Zuñi	*„ 25*	*17.45 „*	*384.75 „*	
Camp.	*„ 26*	*13.71 „*	*398.46 „*	
„	*„ 27*	*27.14 „*	*425.60 „*	
„	*„ 28*	*18.49 „*	*443.09 „*	
Near Laguna	*„ 29*	*28.93 „*	*472.02 „*	
Camp	*„ 30*	*18.51 „*	*491.53 „*	*Water uncertain.*
Albuquerque	*„ 31*	*28.33 „*	*519.86 „*	
Camp.	*„ 32*	*20.70 „*	*540.56 „*	
Delgados.	*„ 33*	*30.75 „*	*571.31 „*	
Santa Fe		*15.80 „*	*587.11 „*	

107°30′ 107° 106°30′ 106°

34°

Senate Ex. doc. 1st Sess. 31st Cong. N° 64.

Pl. 1.



P. S. Duval's Steam Lith. Press Philad^a

Drawn by R. H. Kern from a Sketch by E. M. Kern.

VIEW OF THE PLACER, OR GOLD MOUNTAIN, AND SANDIA MOUNTAIN

from Santa Fé.

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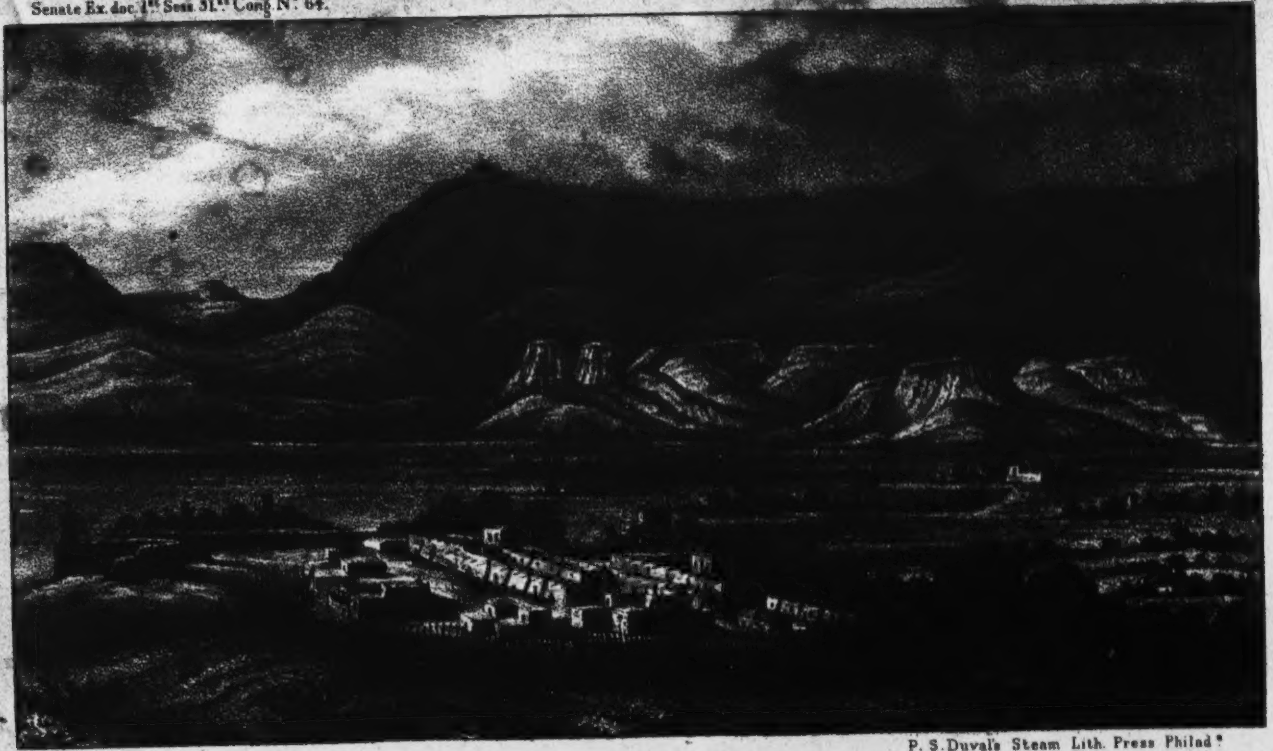
Senate Ex. doc. 1st Sess. 31st Cong. No. 64.

Pl. 3.



R. H. Kern delt.

P. S. Duval's Steam Lith. Press Philada.

PUEBLO OF JÉMEZ

from the East Aug. 20.

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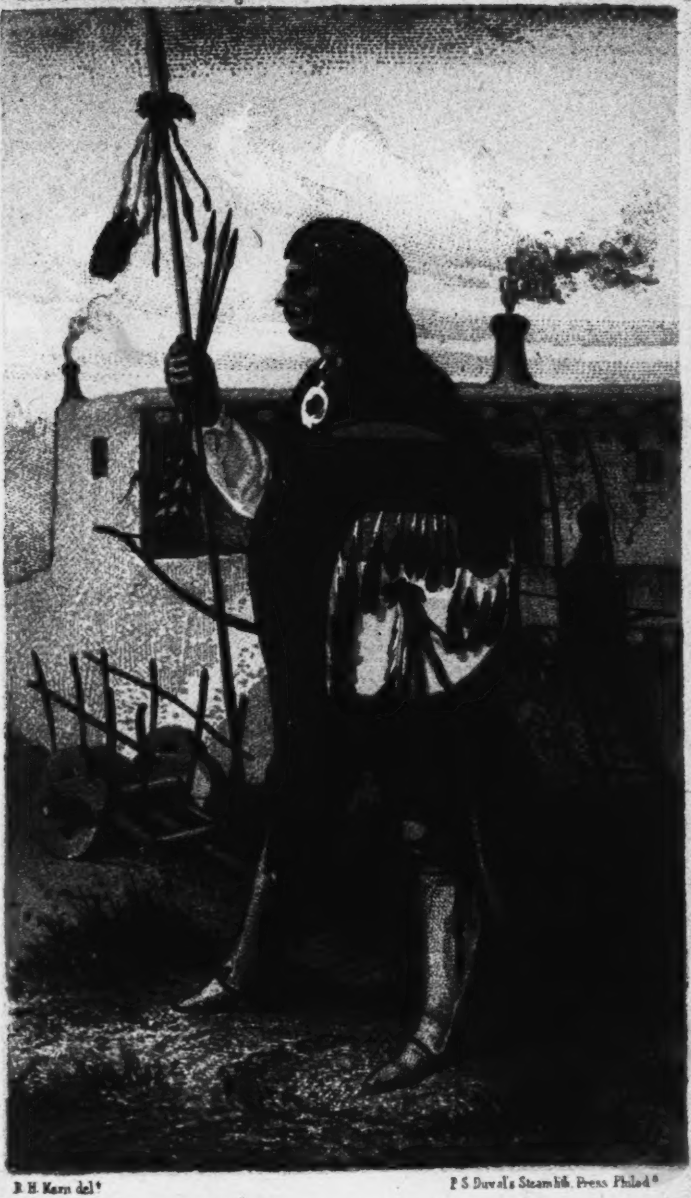

R. H. Kern delt P. S. Duval's Steam lith. Press Philada

HOS-TA, (THE LIGHTNING.)

Governor of the Pueblo of Jémez. Aug. 20.

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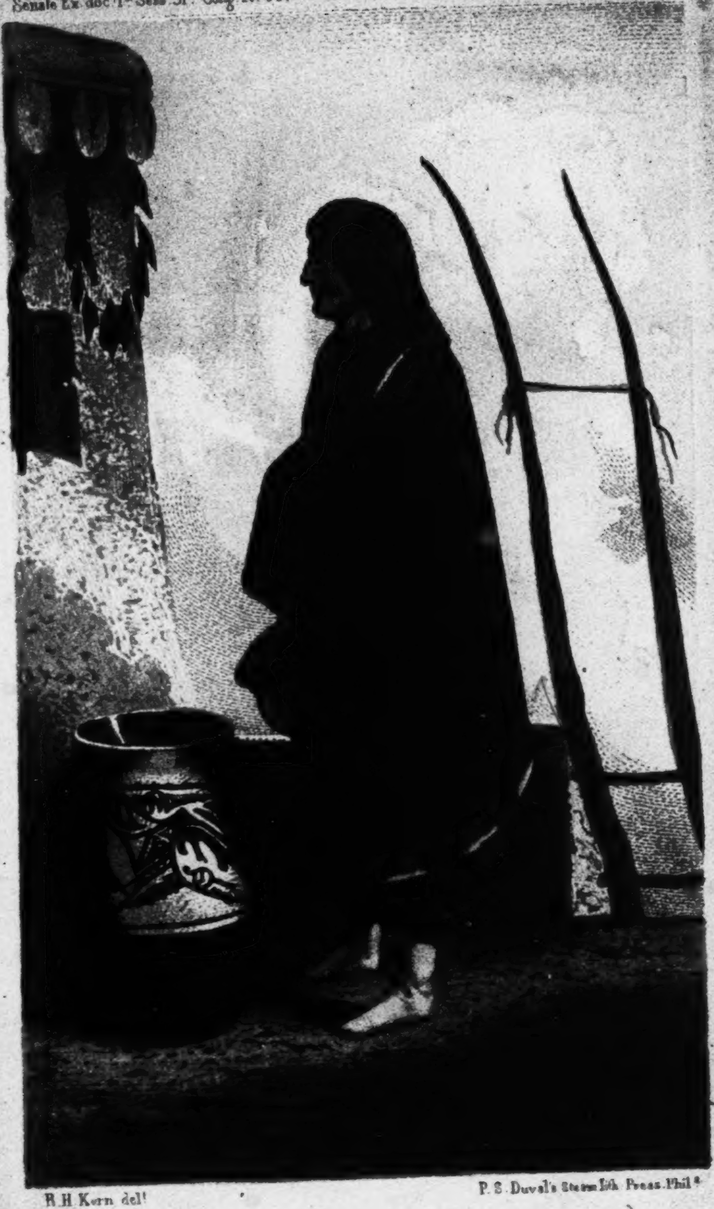

R. H. Kern del.t P. S. Duval's Steam lith. Press. Phil.a

WHAR-TE, (THE INDUSTRIOUS WOMAN.)

Wife of the Governor of Jémez —Aug. 20th

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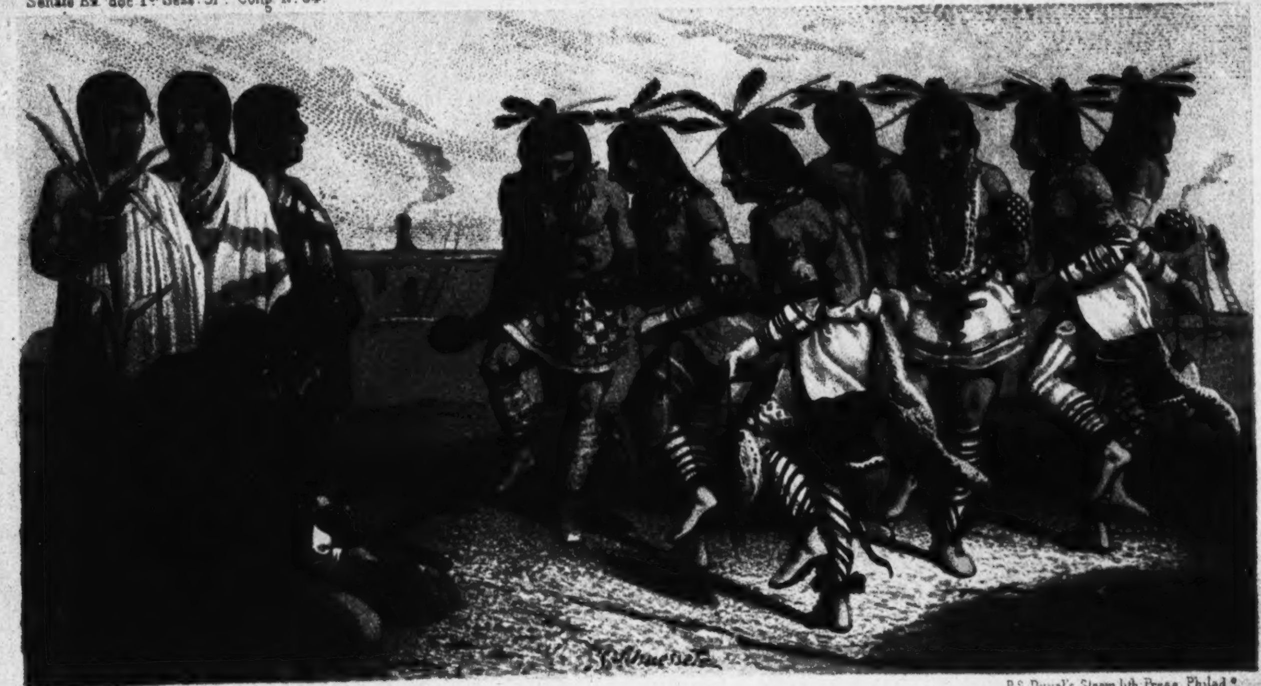

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YOU-PEL-LAY OR THE GREEN-CORN DANCE OF THE JÉMEZ INDIANS

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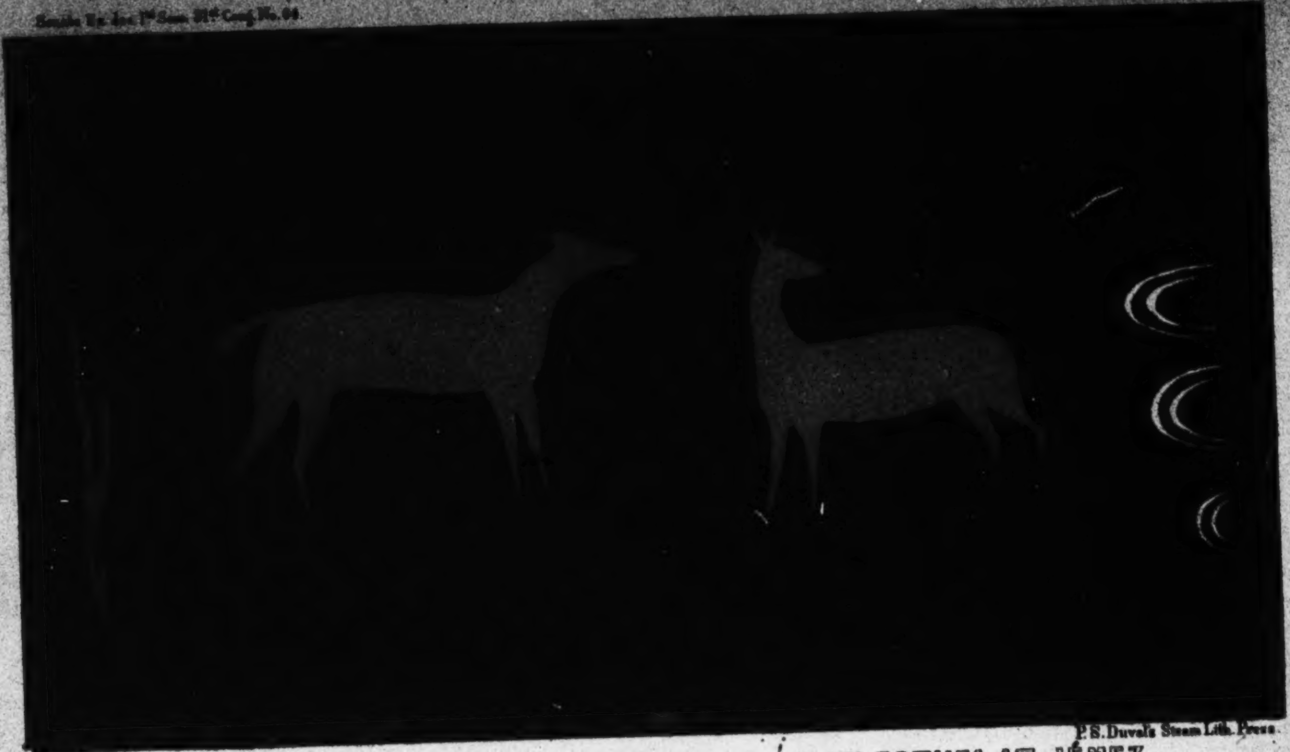

R. H. Kern delt.

P. S. Duval's Steam Lith. Press.

COPIES OF PAINTINGS UPON THE WALLS OF AN ESTUFA AT JÉMEZ.

No. 1. Aug. 20.

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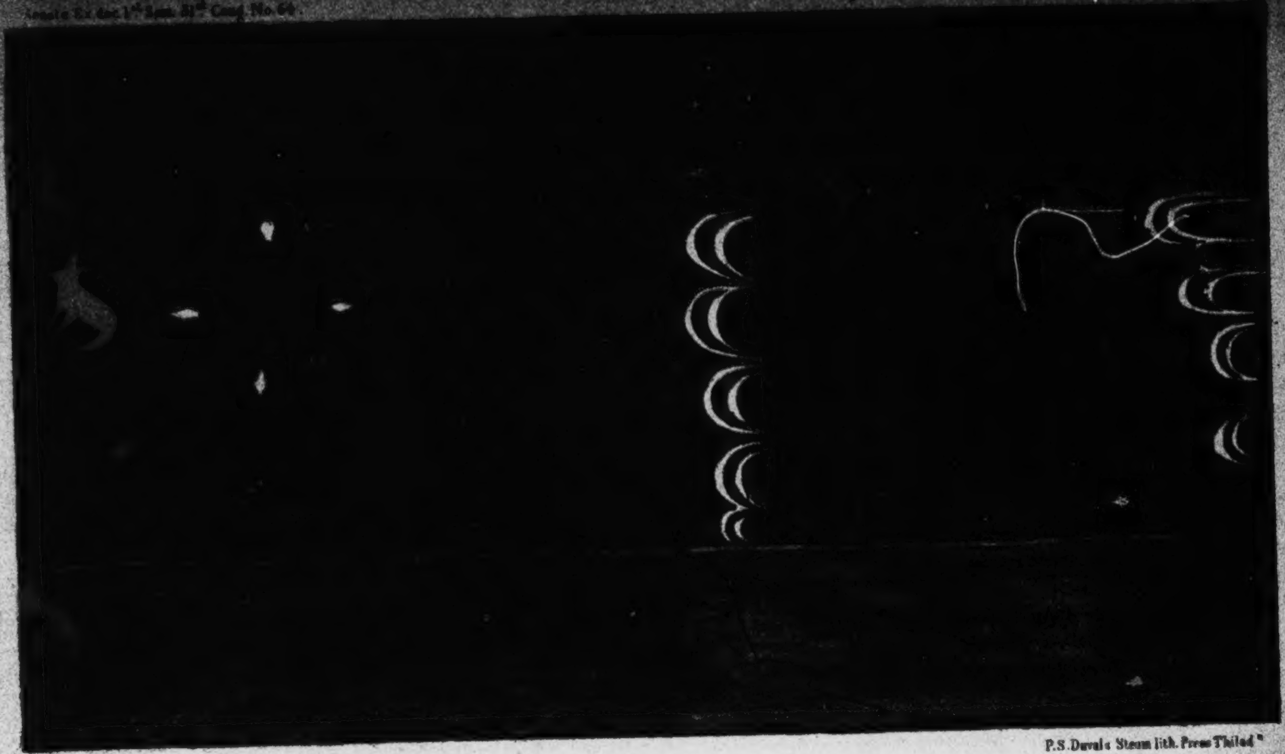

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P.S. Duval's Steam lith. Press Philad^a.

COPIES OF PAINTINGS UPON THE WALLS OF AN ESTUFA AT JÉMEZ.

N.° 2. Aug. 20.

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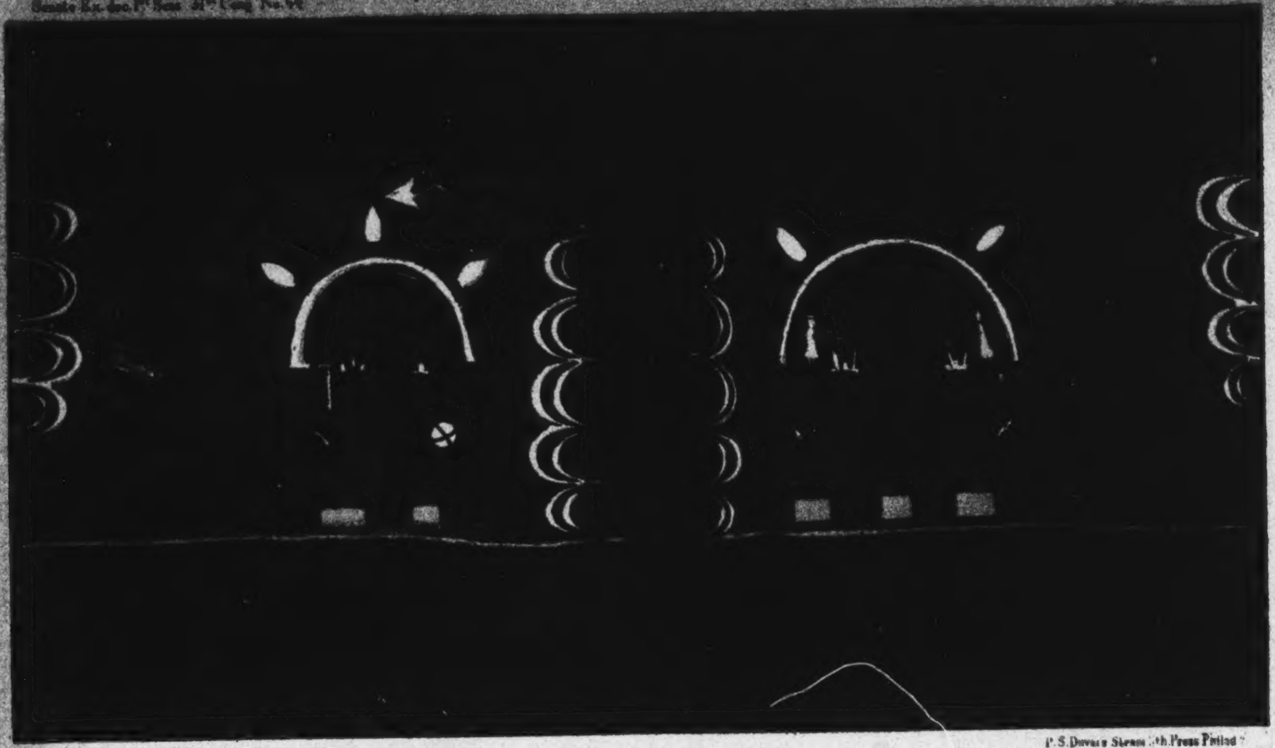

E. H. Kern del. P. S. Duval's Steam lith. Press Philad.

COPIES OF PAINTINGS UPON THE WALLS OF AN ESTUFA AT JĖMEZ.

N° 3.—Aug. 20.

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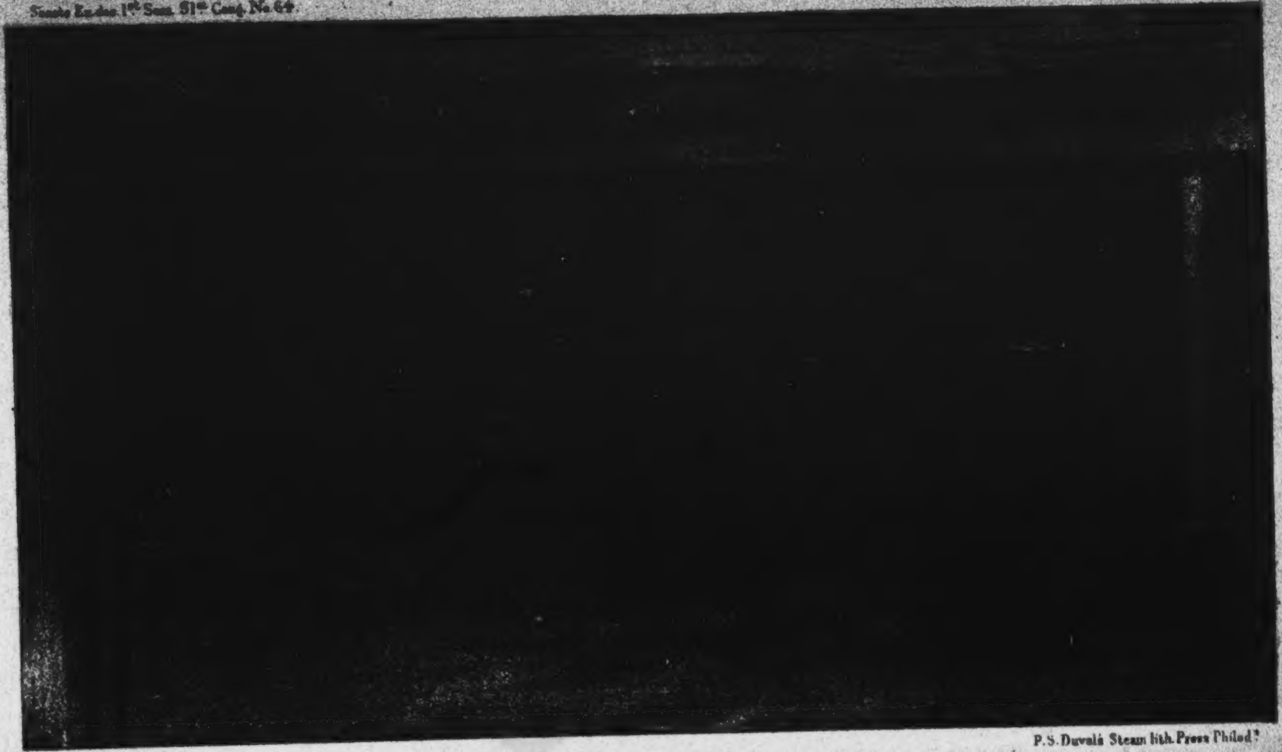

P.S. Duval's Steam lith. Press Philad.a

R.H. Kern delt

OF PAINTINGS UPON THE WALLS OF AN ESTUFA AT JÉMEZ.

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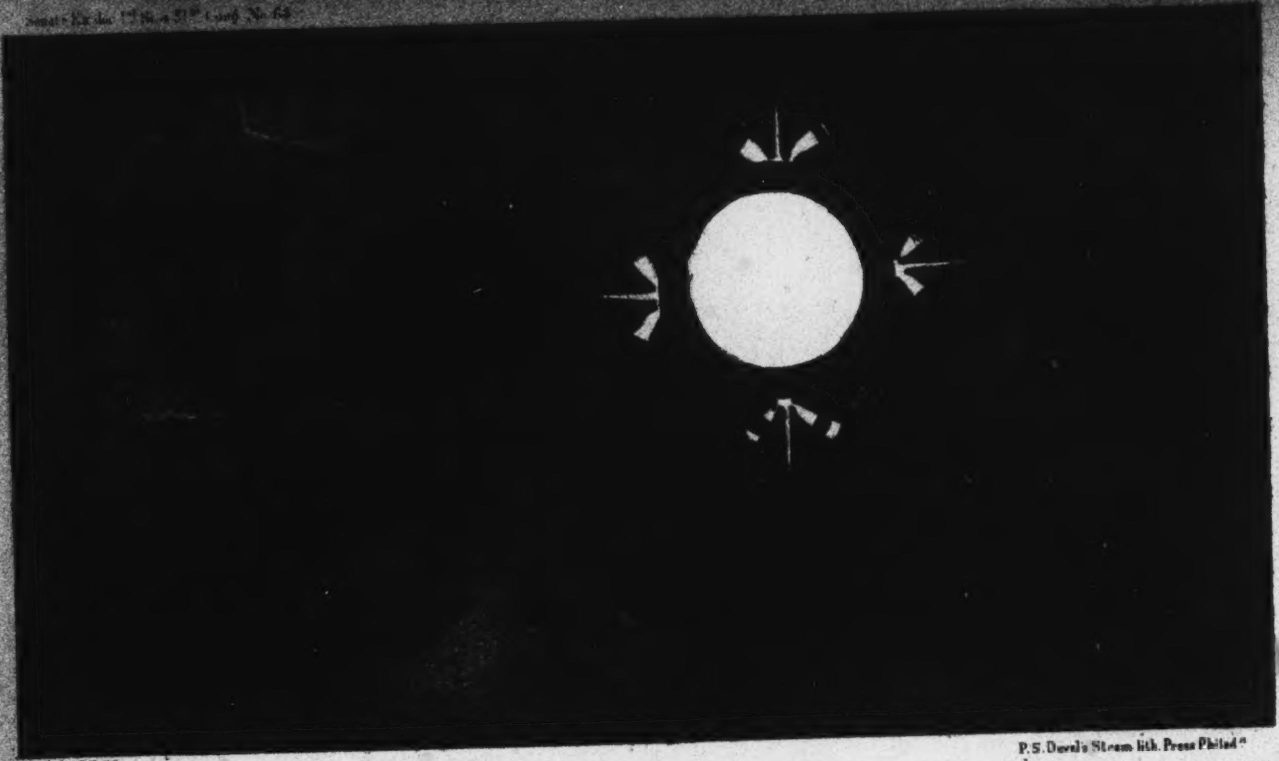
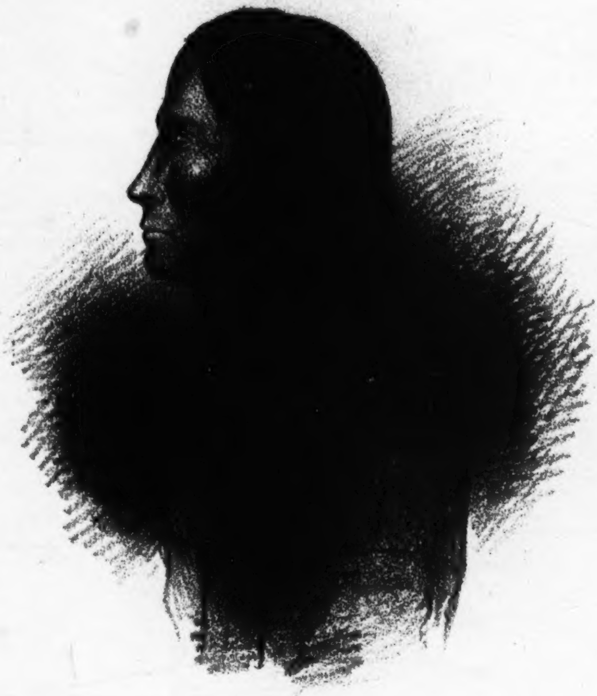


R. H. Kern delt.

P. S. Duval's Steam lith. Press Philada.

COPIES OF PAINTINGS UPON THE WALLS OF AN ESTUFA OF JÉMEZ.

N° 5. Aug. 20.



P. S. Duval's Steam lith. Press Philada.

WASH-U-HOS-TE,

(Big White Bead.)

a Pecos Indian.

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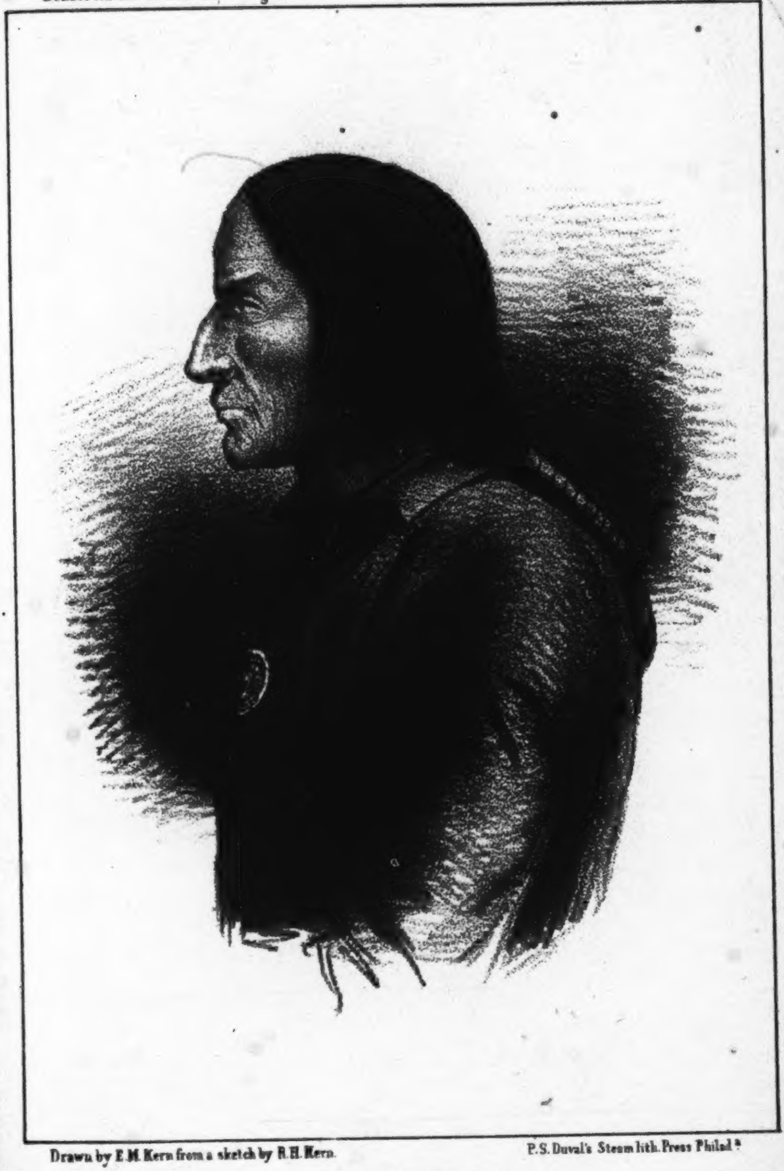

Drawn by E. M. Kern from a sketch by R. H. Kern. P. S. Duval's Steam lith. Press Philad.

OW-TE-WA

(Captain)

Ex Gouvernor of Santa Ana.

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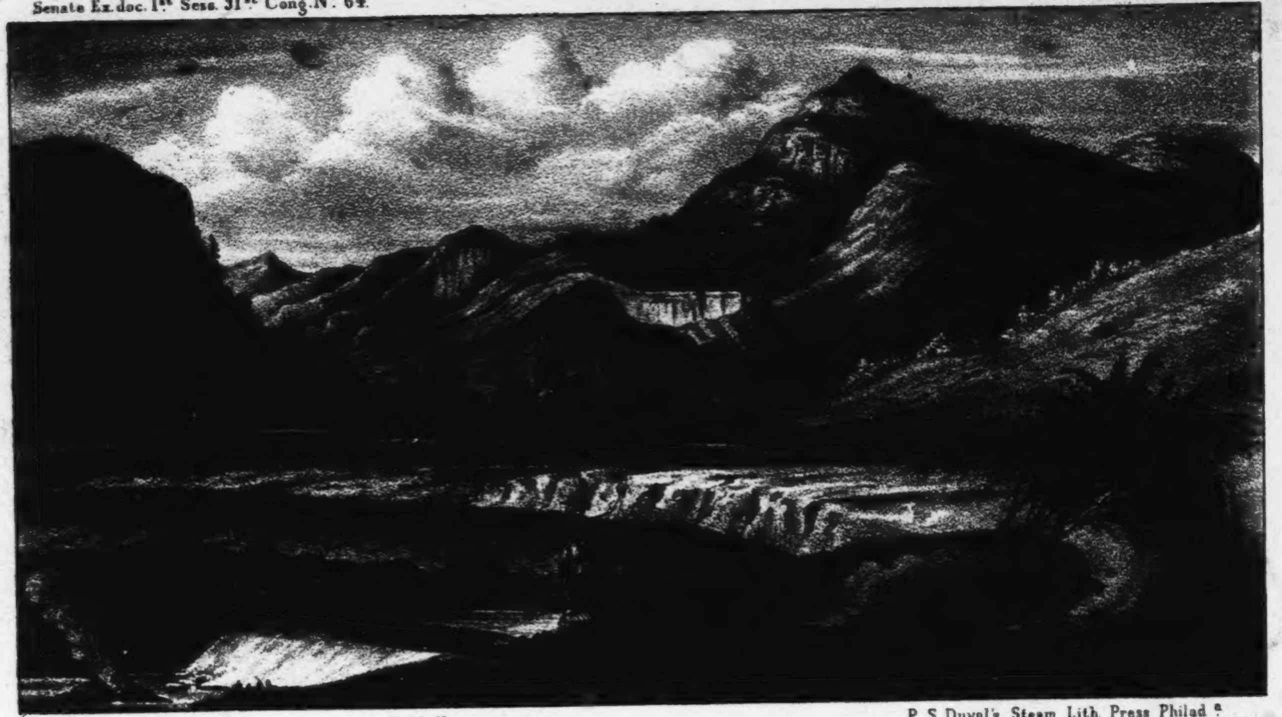

Drawn by R. H. Kern from a sketch by E. M. Kern.

P. S. Duval's Steam Lith. Press Philada.

THE OJO CALIENTE

twelve miles above Jémez

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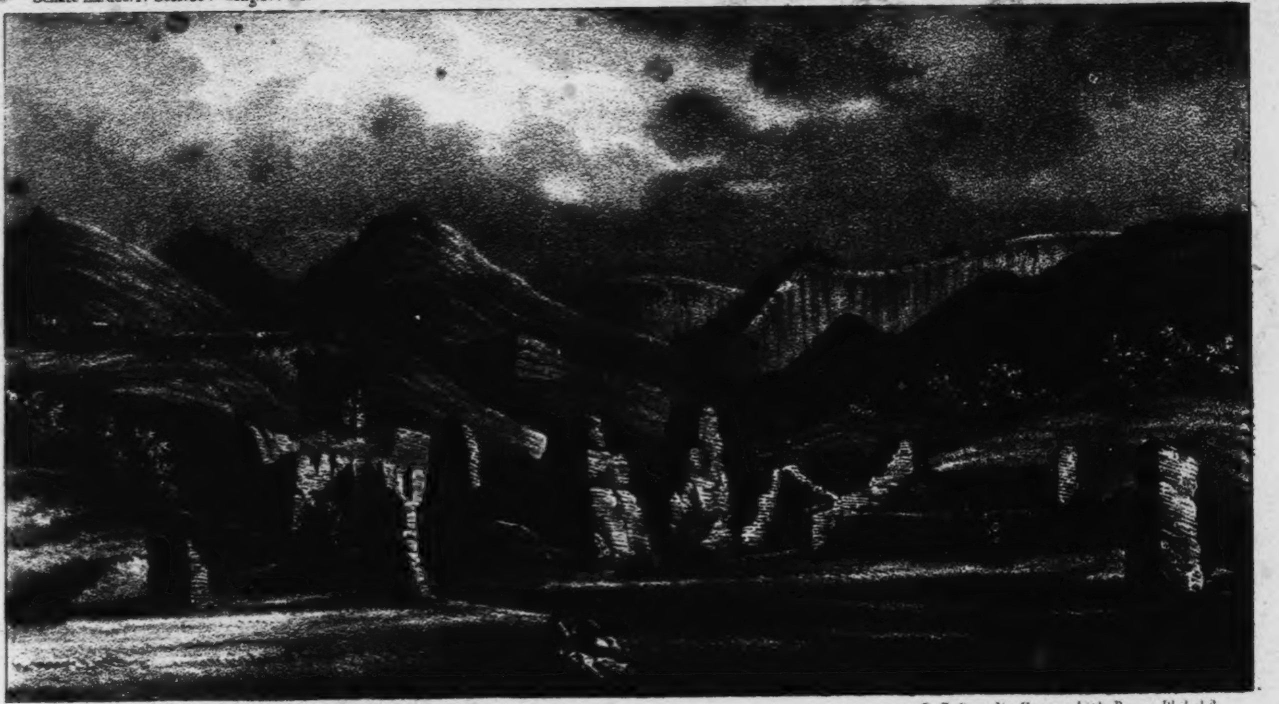

Drawn by R. H. Kern from a sketch by E. M. Kern.

P. S. Duval's Steam Lith. Press Philad.ª

RUINS OF A ROMAN CATHOLIC CHURCH

near the Ojo Caliente twelve miles above Jémez.

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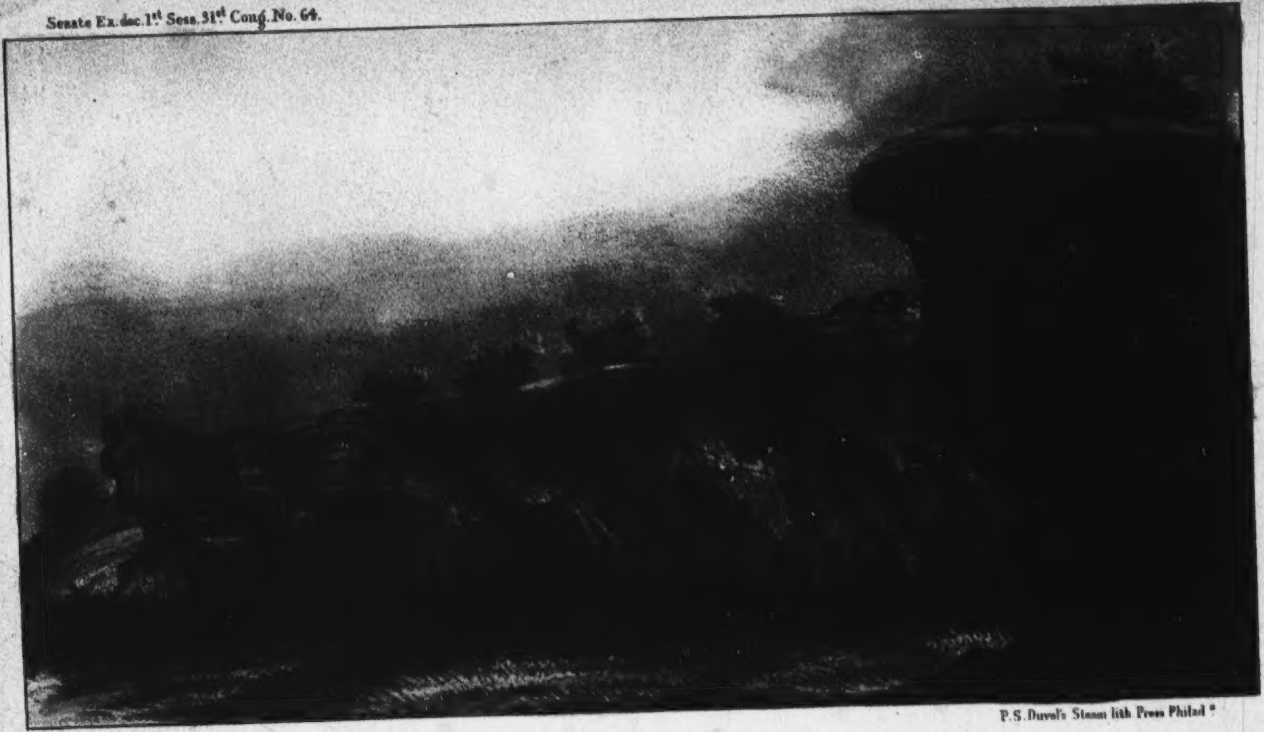

R. H. Kern delt.

P. S. Duval's Steam lith Press Philad^a

NORTH WALL OF THE CAÑON DE LA COPA

(Cañon of the Cup)-Aug. 24.

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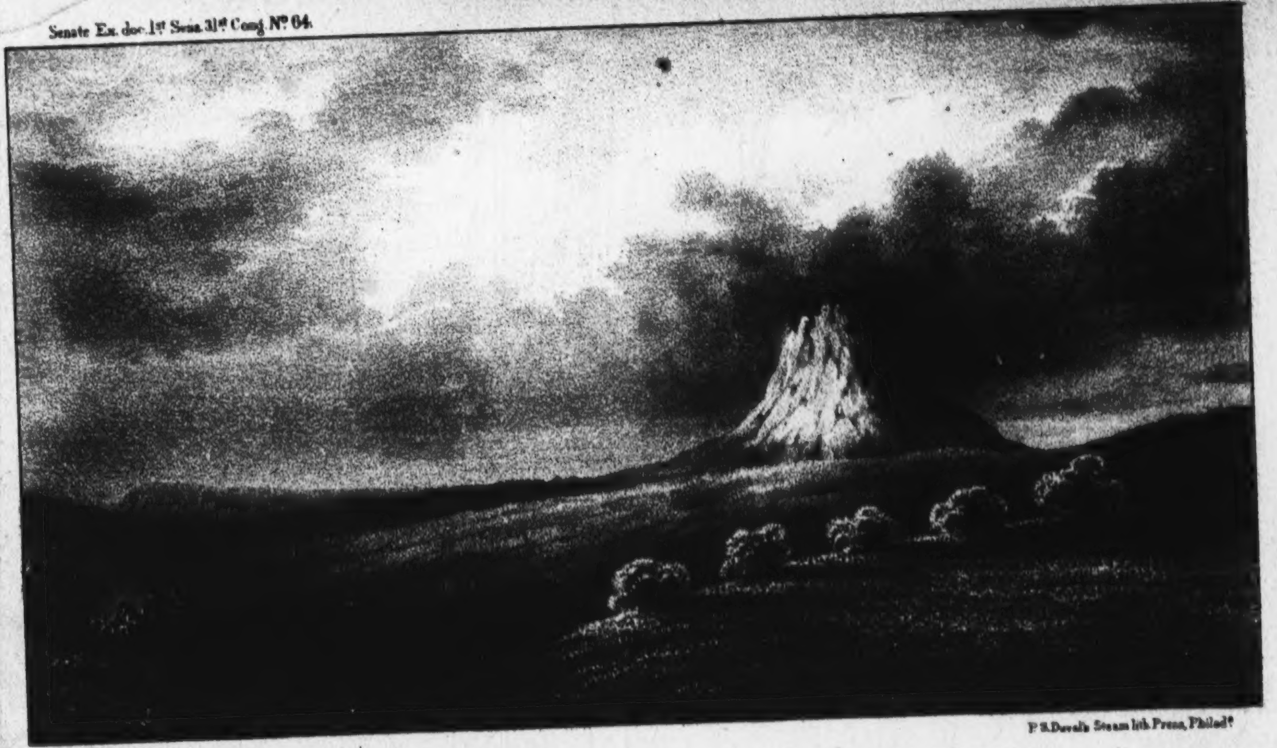

R. H. Kern del.

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CERRO DE LA CABEZA IN THE VALLEY OF THE RIO PUERCO.

View taken three miles west of Camp 6.—Aug. 25.

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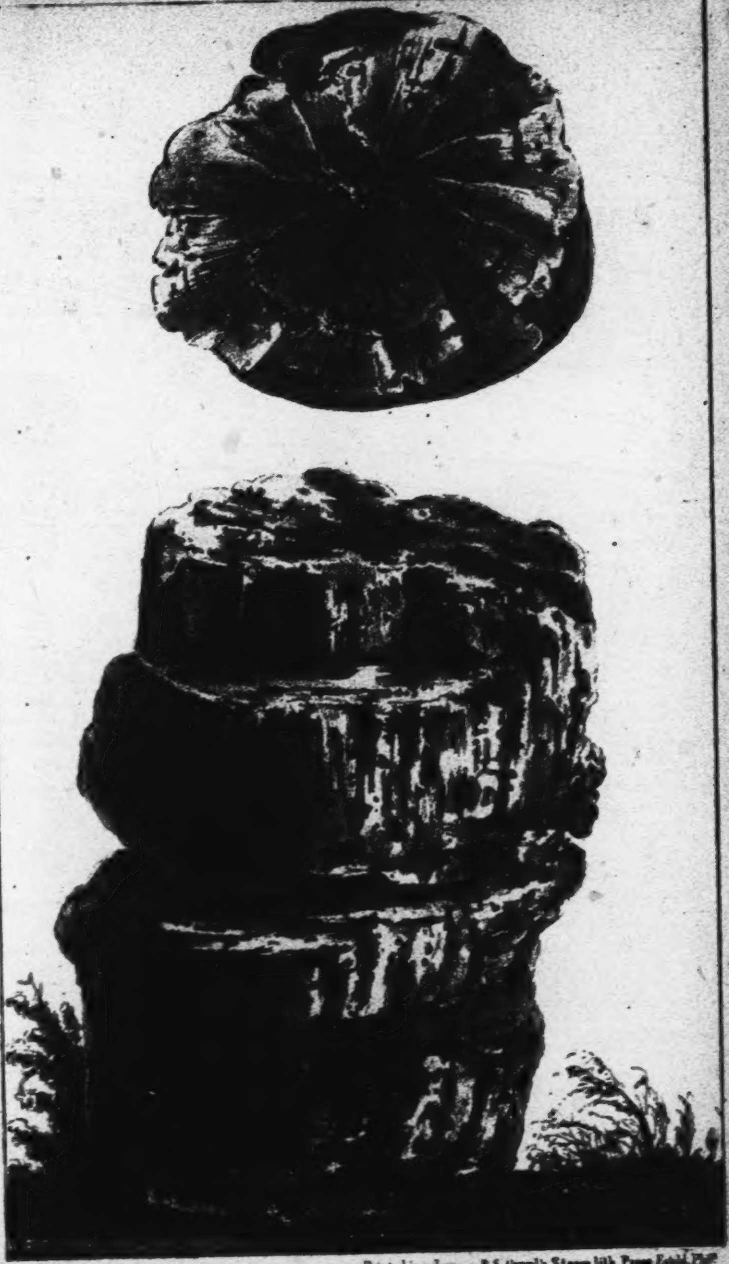

R. H. Kern delt.

Printed in colours · P.S. Duval's Steam lith. Press Estab'd. Phila

Elevation and Cross Section of a petrified Stump of a tree, found standing upright in place between camps No. 7 and 8.

Height, 3 ft. Diameter, 2½ ft. – Aug. 26.

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R. H. Kern delt.

Printed in colours at P. S. Duval's Steam lith. Press Establ. Phil.

View of a petrified Stamp of a tree found lying split open
as exhibited in the drawing. Locality, between camps No. 7 and 8.

Length, 4 ft Diameter, in its integrity 2½ ft. Aug. 26.

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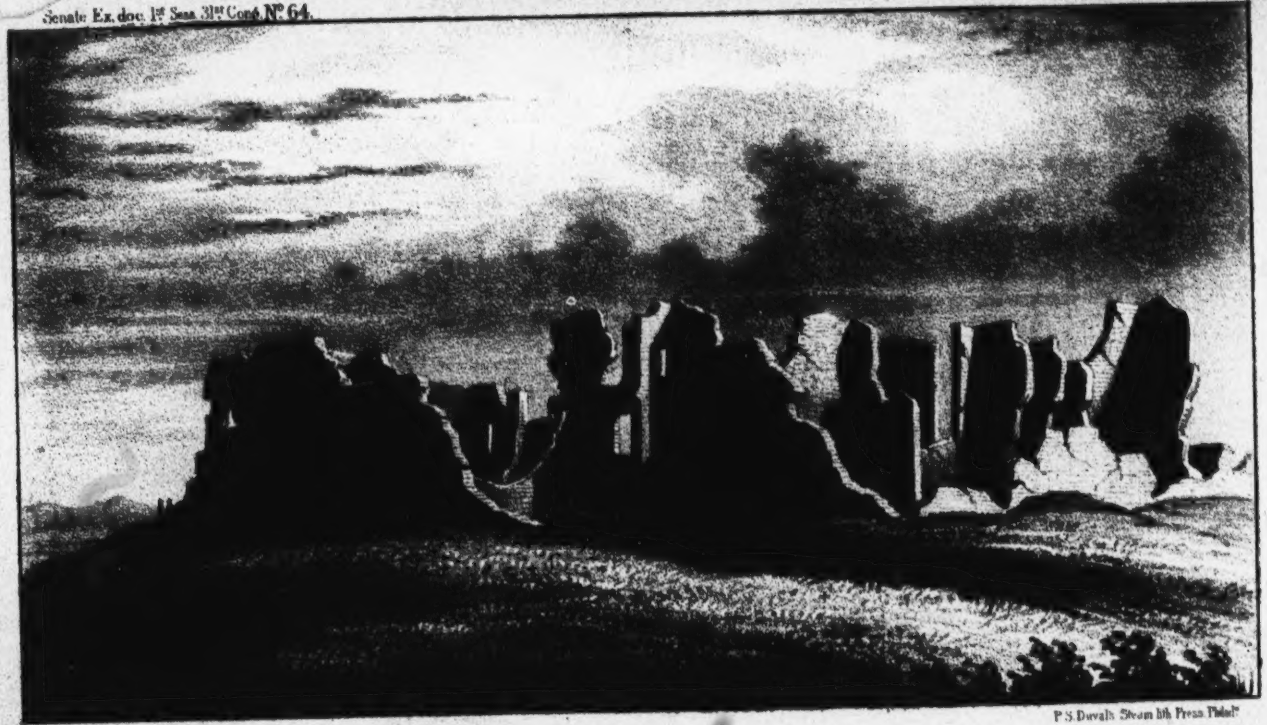

R.H. Kern delt.

P.S. Duval's Steam lith Press Philad.

NORTH WEST VIEW OF THE RUINS OF THE PUEBLO PINTADO IN THE VALLEY OF THE RIO CHACO.

Aug. 26. – No. 1

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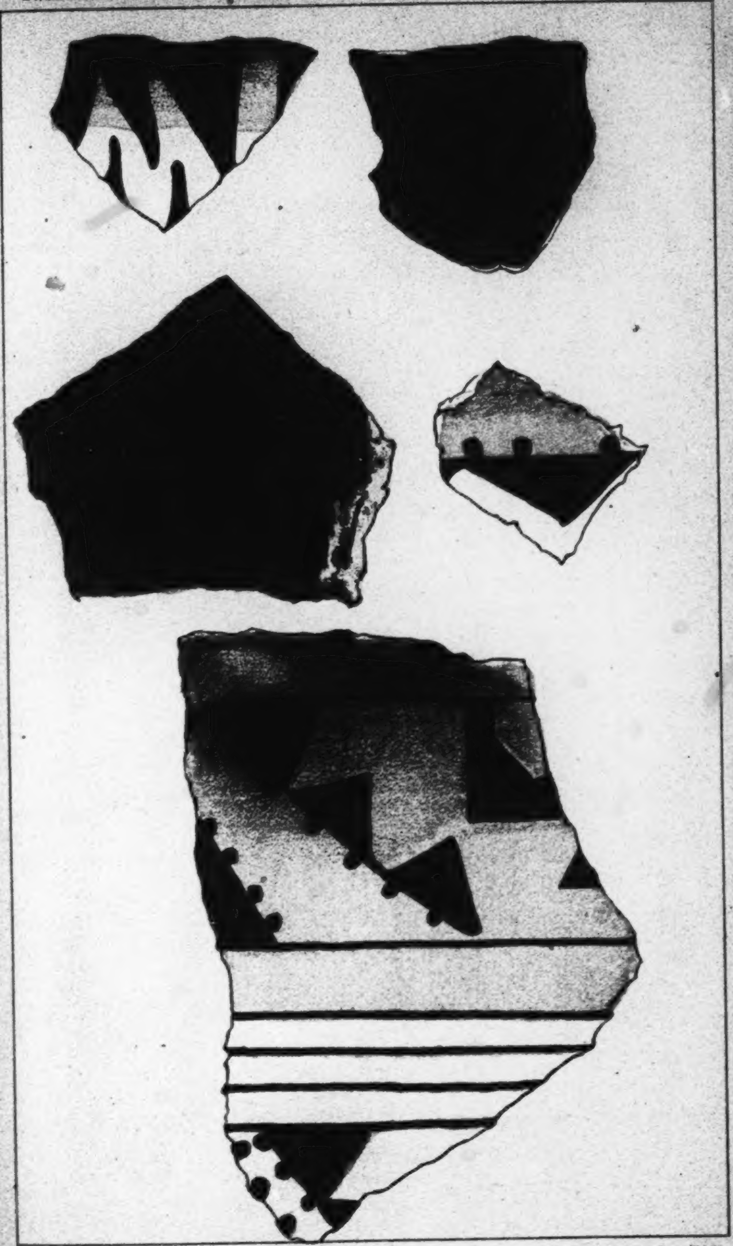

R.H. Kern delt

P.S. Duval's Steam lith. Press, Phila.

POTTERY found at the PUEBLO PINTADO.

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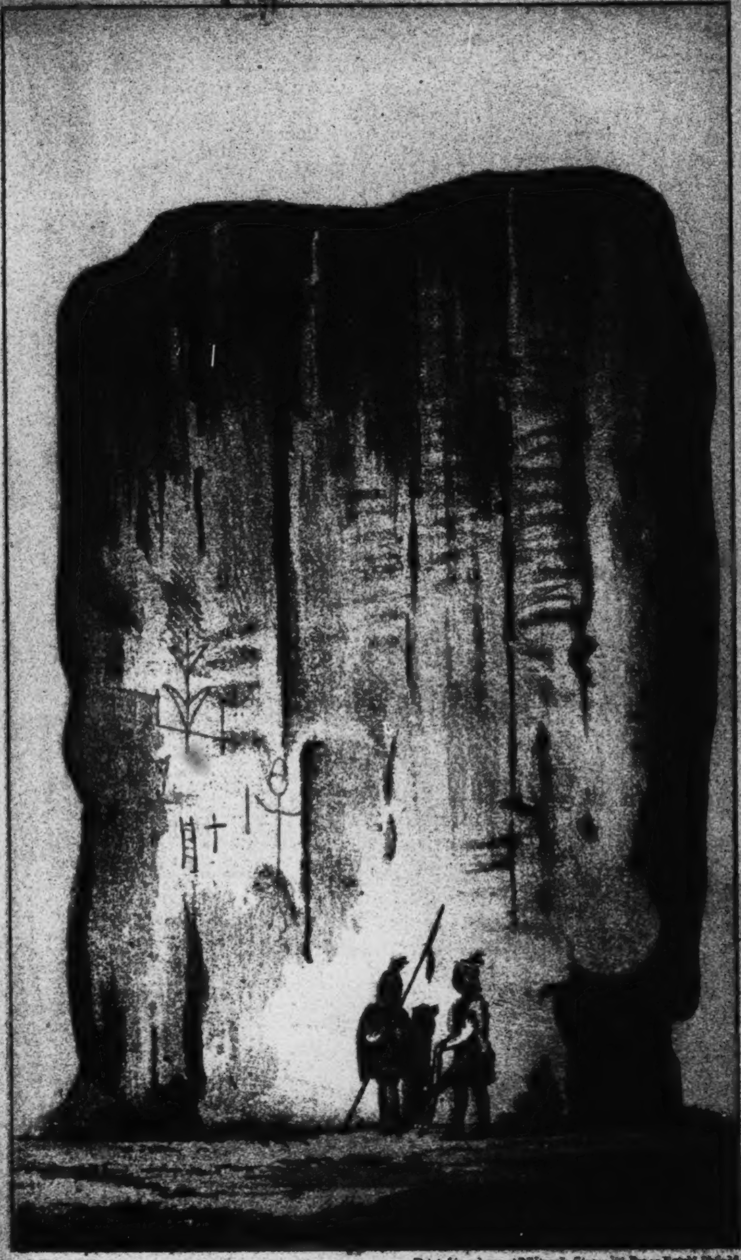

R. H. Kern delt Printed in colours at P. S. Duval's Steam lith. Press Estabt. Philada

HIEROGLYPHICS ON A SAND STONE BOULDER.

Near Camp 9.

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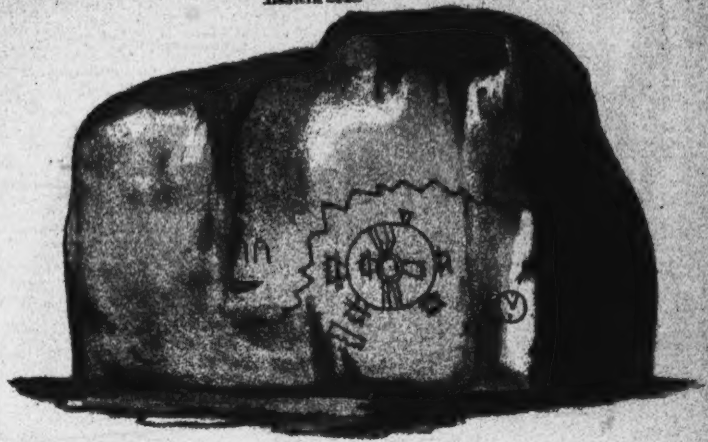
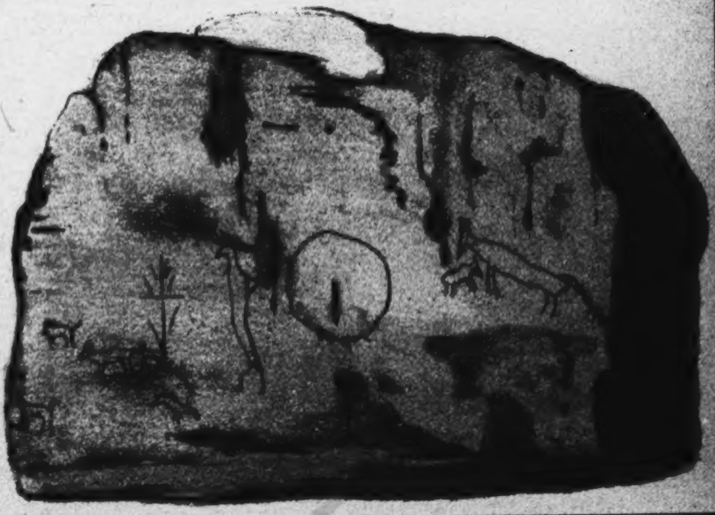
Eastern Side.



Southern Side.



R. H. Kern delt.

Printed in colours by P. S. Duval's Steam lith. Press Philada.

HIEROGLYPHICS ON A SAND STONE BOULDER.

Near Camp 8.

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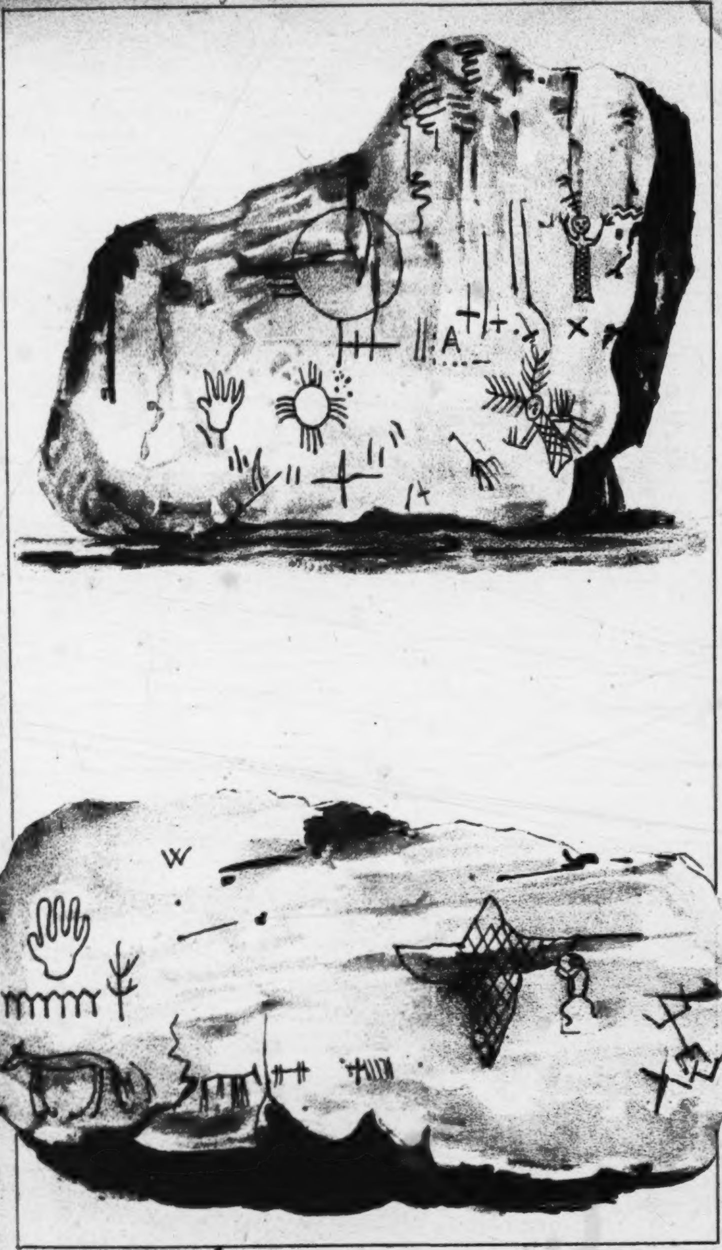

R. H. Kern delt. P. S. Duval's Steam Lith. Press Phila.

HIEROGLYPHICS ON SAND STONE ROCKS.

Near Camp 9.

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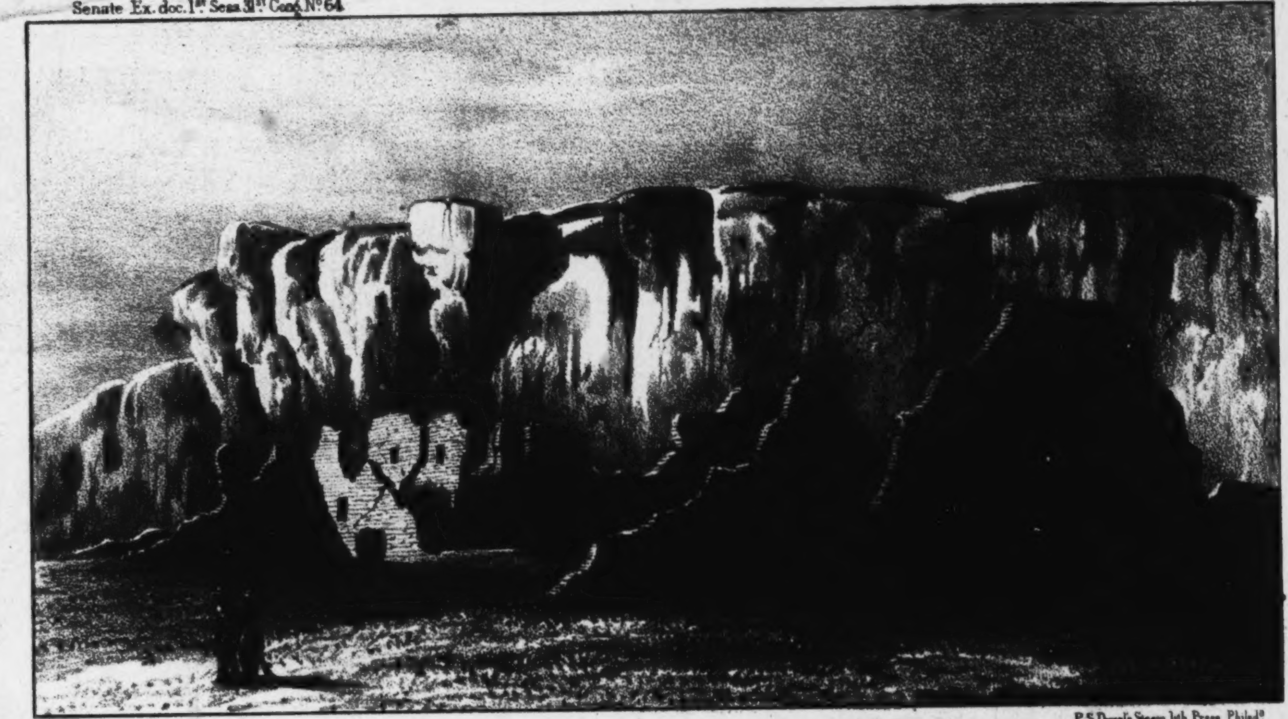

R. H. Kern delt

P. S. Duval's Steam lith Press Philada

SOUTH EAST VIEW OF THE RUINS OF THE PUEBLO WEJE-GI IN THE CAÑON OF CHACO.

Aug. 27 – No. 2.

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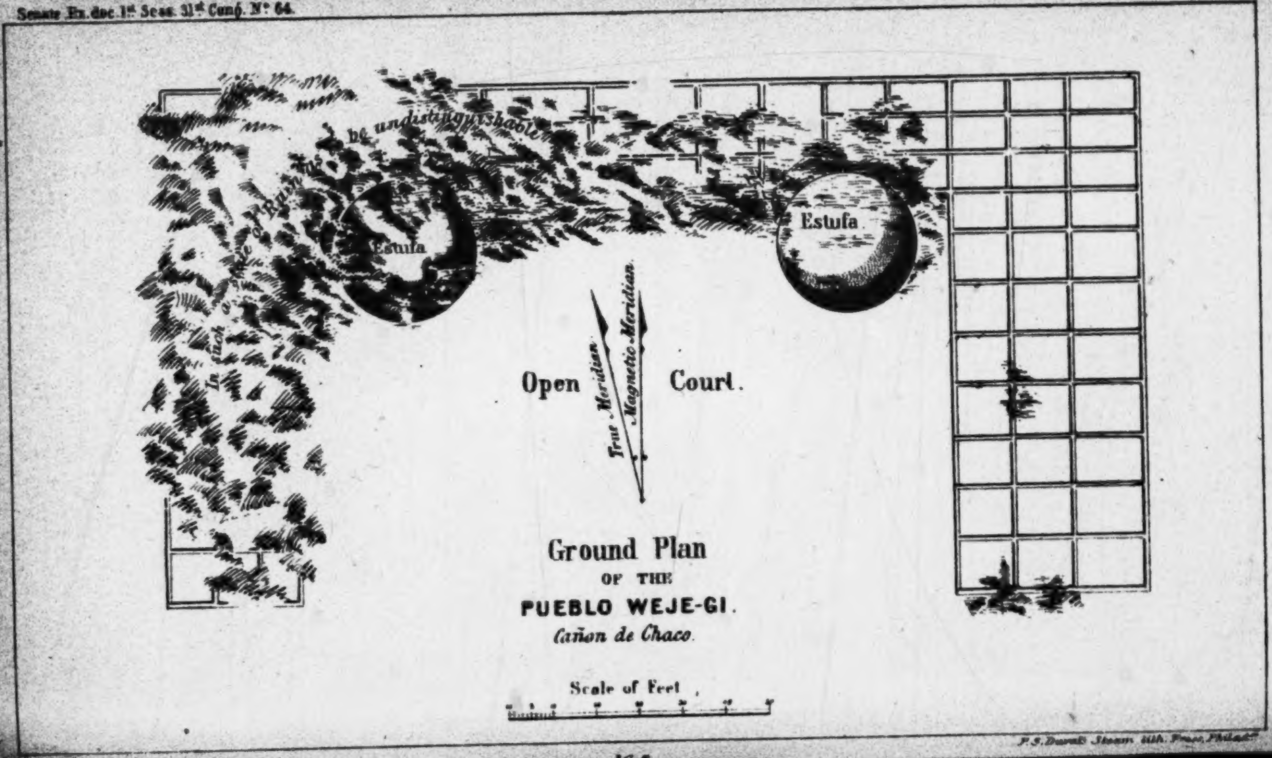
In such a state of Ruin as to be undistinguishable
Estufa
Estufa
Open Court.
True Meridian
Magnetic Meridian
Scale of Feet

Ground Plan
OF THE
PUEBLO WEJE-GI.
Cañon de Chaco.

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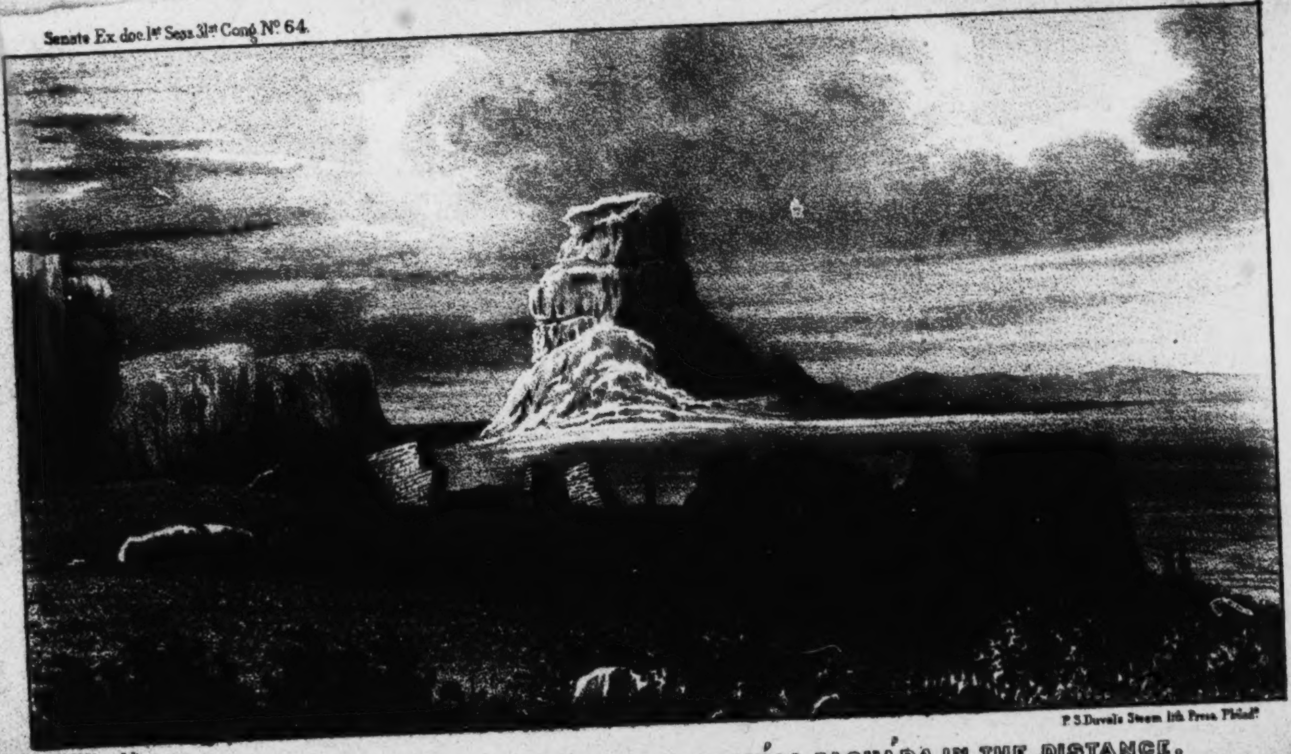
Senate Ex. doc. 1st Sess. 31st Cong. Nº 64.

Pl. 28.



P. S. Duval's Steam lith. Press, Philadª

R. H. Kern delt.

RUINS OF THE PUEBLO UNA VIDA, WITH THE MÉSA FACHÁDA IN THE DISTANCE.

Canon of Chaco. Aug. 28 – Nº 3.

LIBRARY
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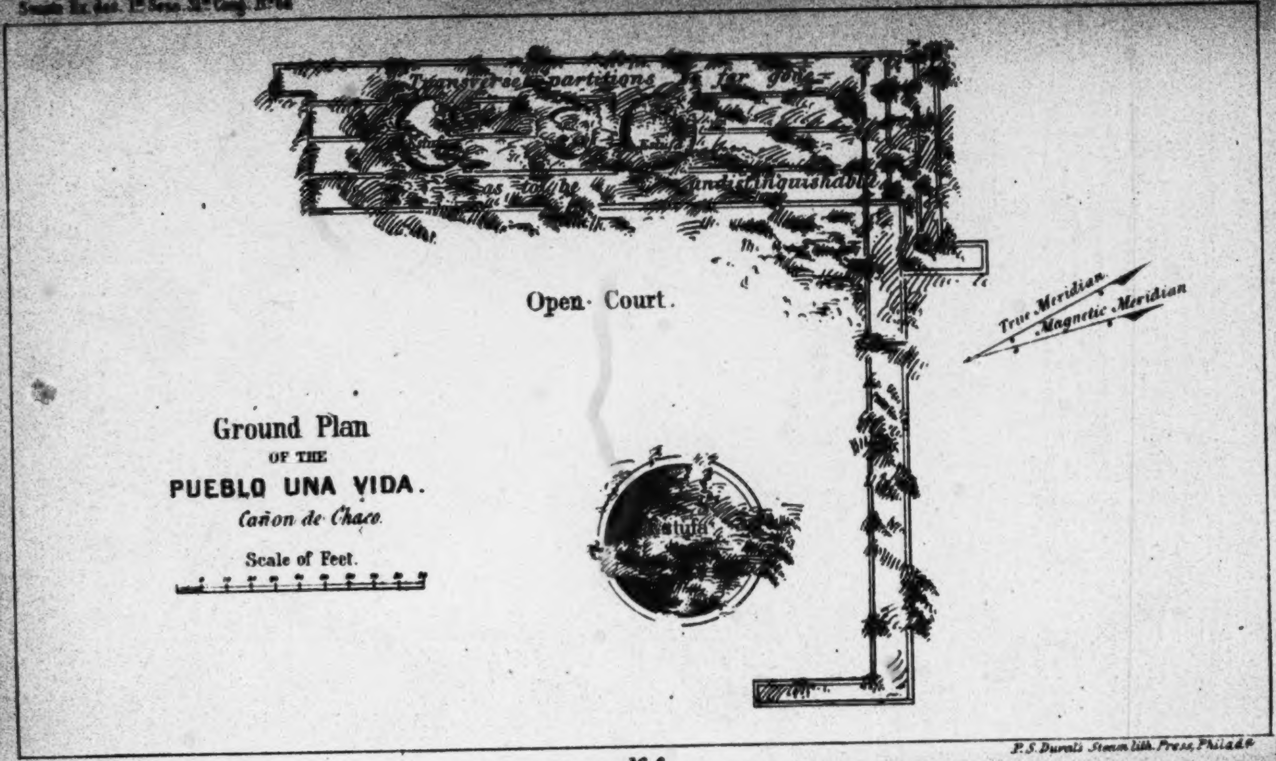
Transverse partitions far gone
as to be undistinguishable
Open Court.
Estufa
True Meridian
Magnetic Meridian

Ground Plan
OF THE
PUEBLO UNA VIDA.
Cañon de Chaco.

Scale of Feet.

P. S. Duval's Steam lith. Press, Philada

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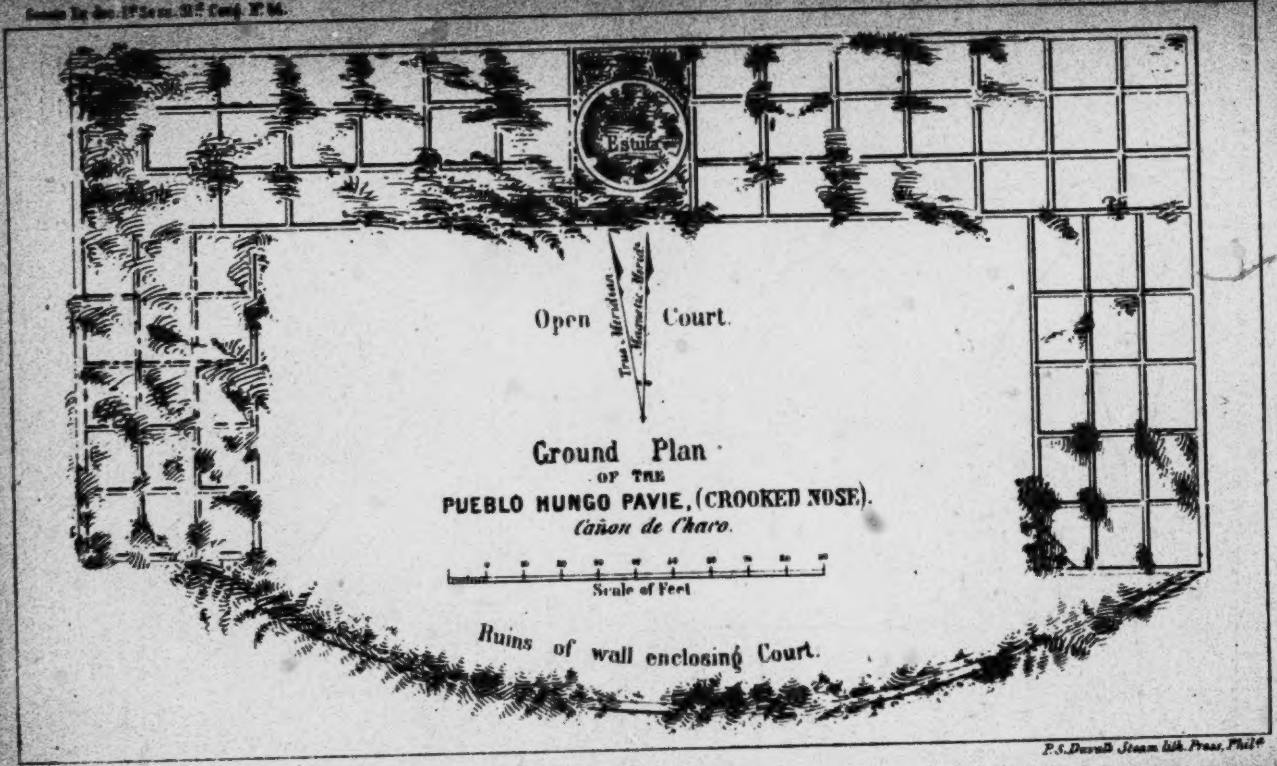
Estufa
Open Court.
True Meridian
Magnetic Merid.
0
Scale of Feet
Ruins of wall enclosing Court.

Ground Plan
OF THE
PUEBLO HUNGO PAVIE, (CROOKED NOSE).
Cañon de Chaco.

P. S. Duval's Steam lith. Press, Phil.a

No. 4.

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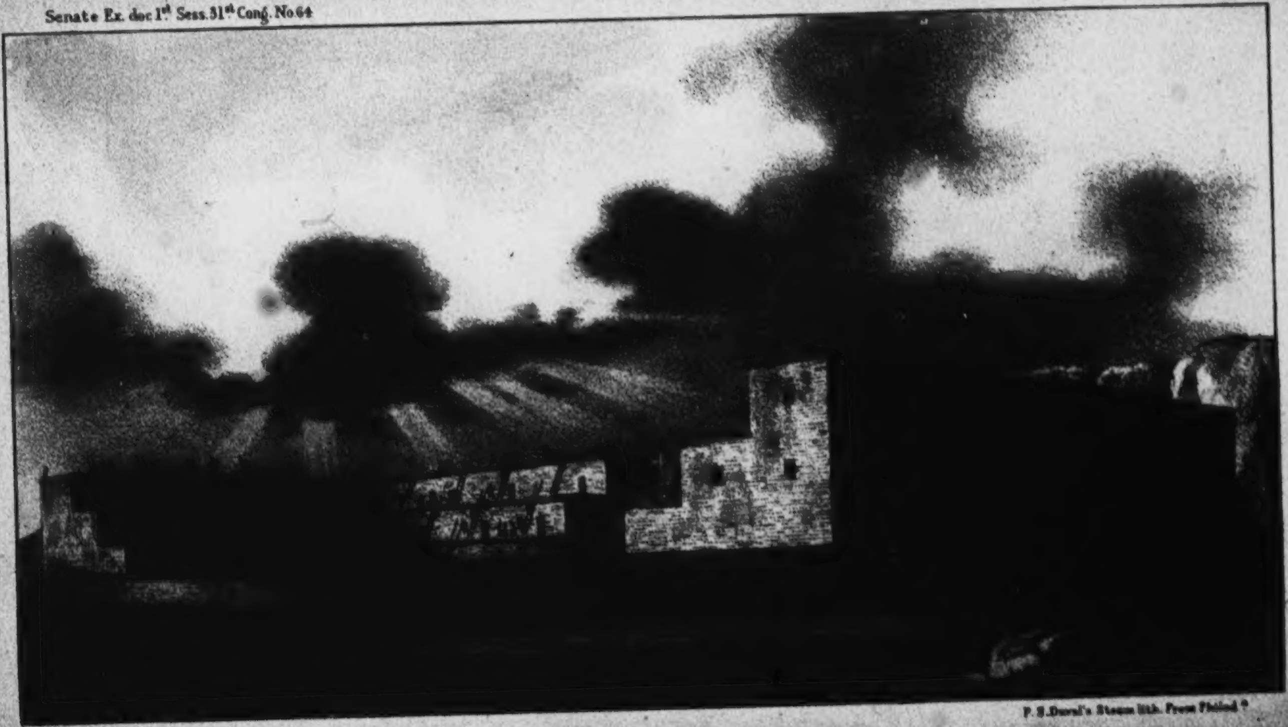
Senate Ex. doc 1st Sess. 31st Cong. No. 64

Pl. 51.



P. S. Duval's Steam lith. Press Philad.a

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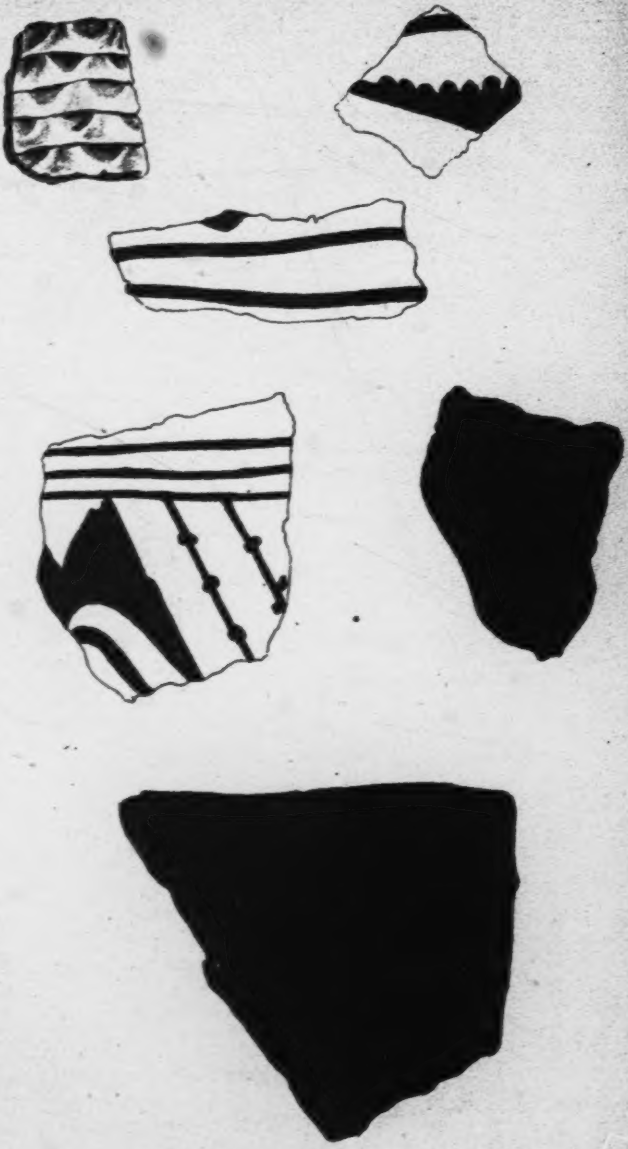

R H Kern delt

P S Duval's steam lith. Press Philada

POTTERY FOUND AT THE PUEBLO HUÑGO PAVIE.

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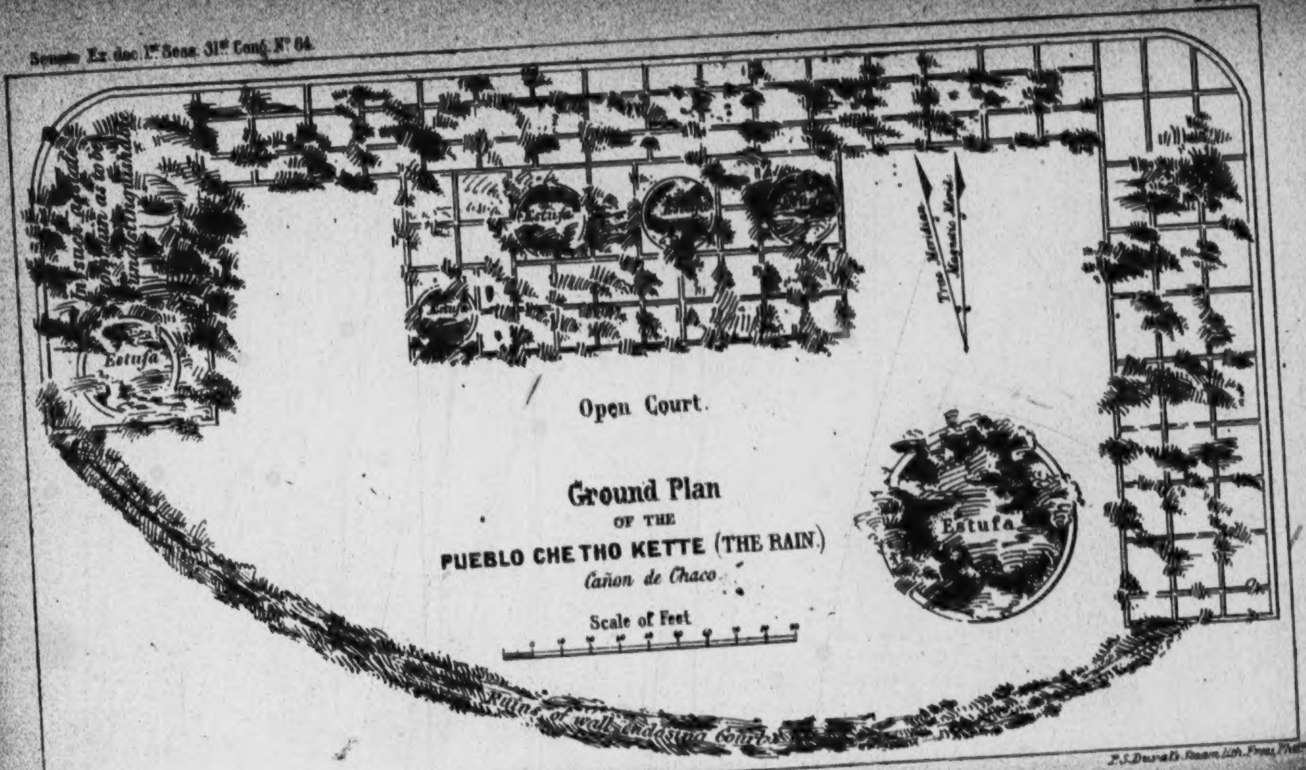
In such a state of ruin as to be undistinguishable
Estufa
Estufa
Estufa
Estufa
Estufa
Estufa
True Meridian
Magnetic Merid.
Open Court.
Estufa
Scale of Feet
Ruins of wall enclosing court

Ground Plan
OF THE
PUEBLO CHE THO KETTE (THE RAIN.)
Cañon de Chaco.

P. S. Duval's Steam lith. Press, Phila.

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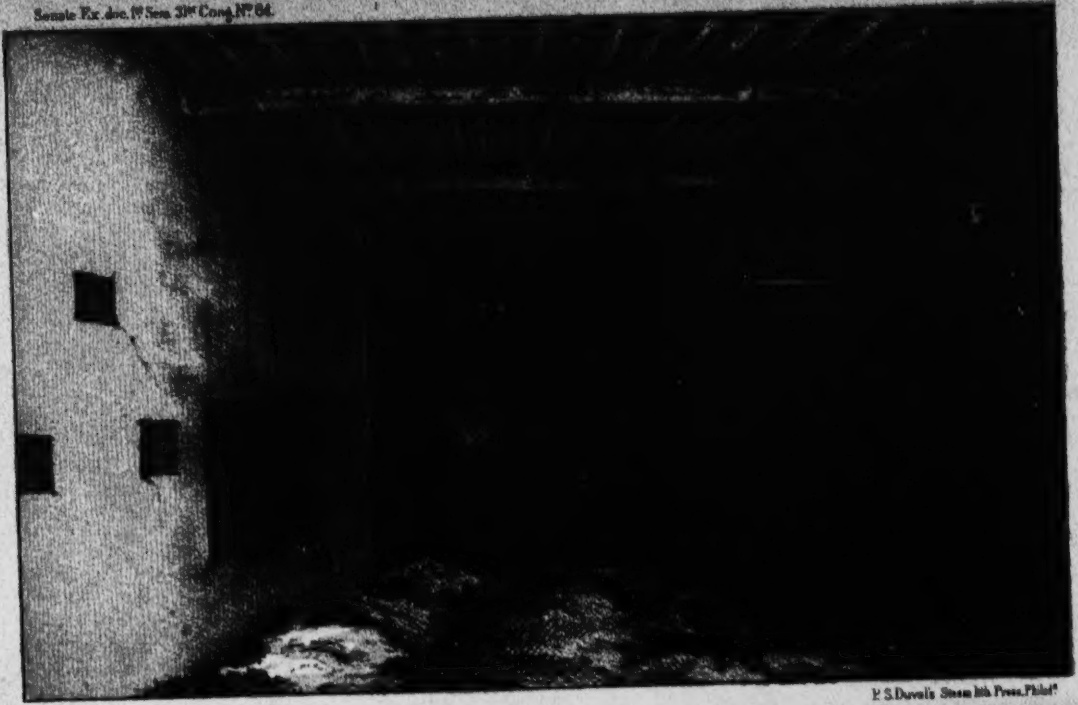
OF THE
UNIVERSITY of ILLINOIS.



R. H. Kern delt.

P. S. Duval's Steam lith. Press, Philada.

INTERIOR OF A ROOM IN THE NORTH RANGE OF THE PUEBLO CHETHO-KETTE (THE RAIN).

Aug. 26th Nº 3.

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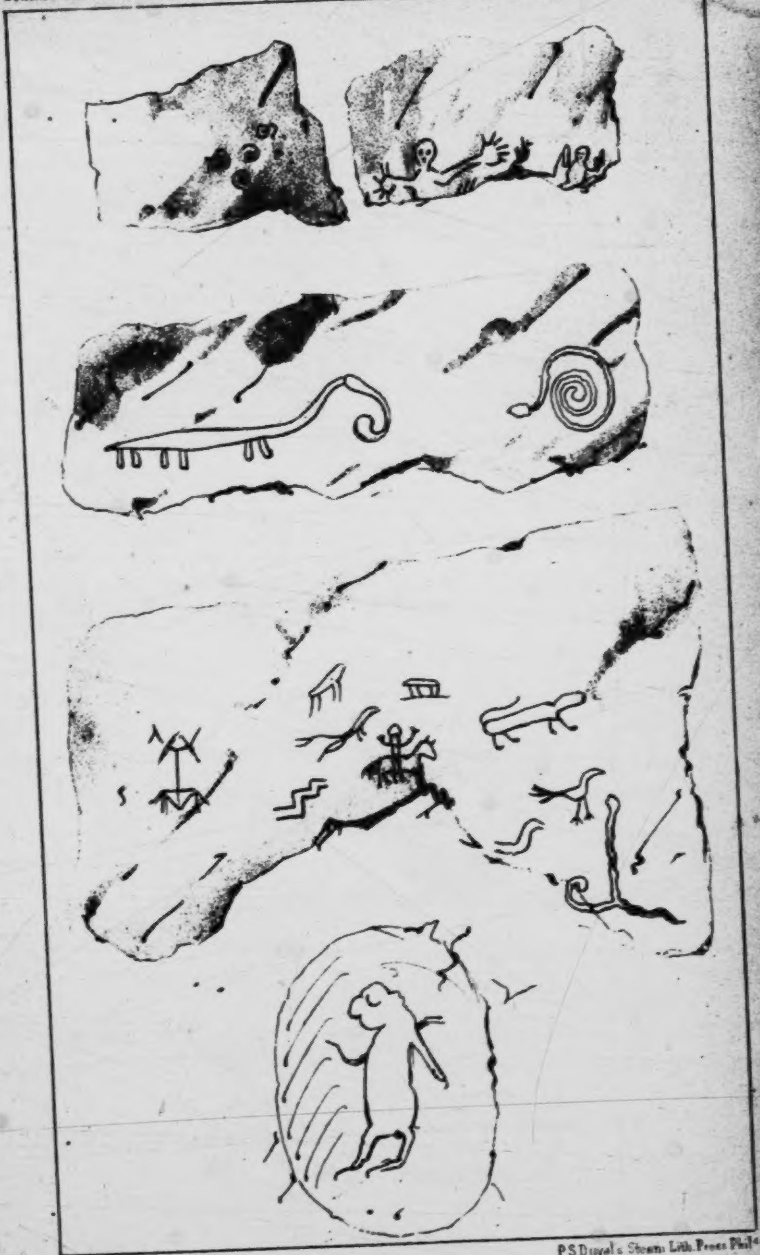

R. H. Kern del^t

P. S. Duval's Steam Lith. Press Phil^a

HIEROGLYPHICS ON NORTH WALL OF THE CAÑON OF CHACO

Near Ruins of the Pueblo Chetho Kette

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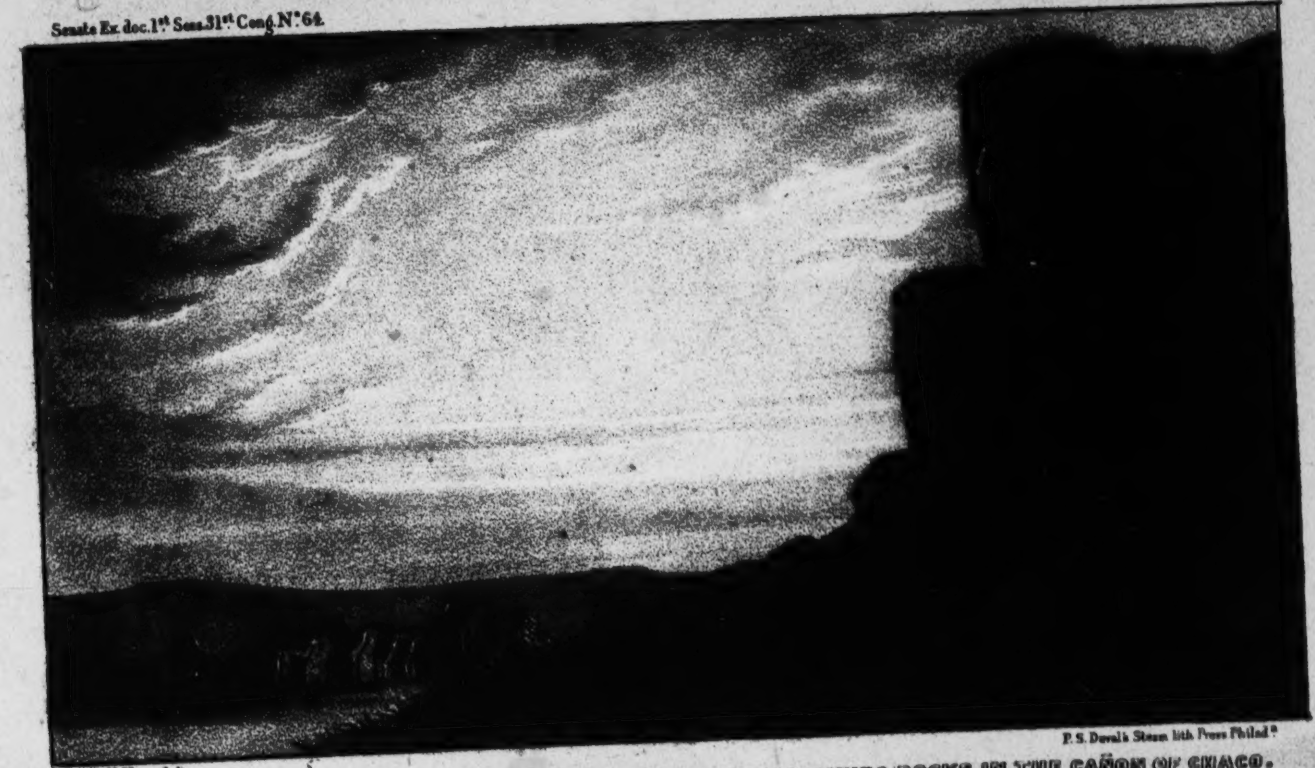

P. S. Duval's Steam lith Press Philad.a

R. H. Kern delt.

DISTANT VIEW OF THE RUINS OF THE PUEBLO BONITO AND ADJOINING ROCKS, IN THE CAÑON OF CHACO.

Aug. 28. N° 6.

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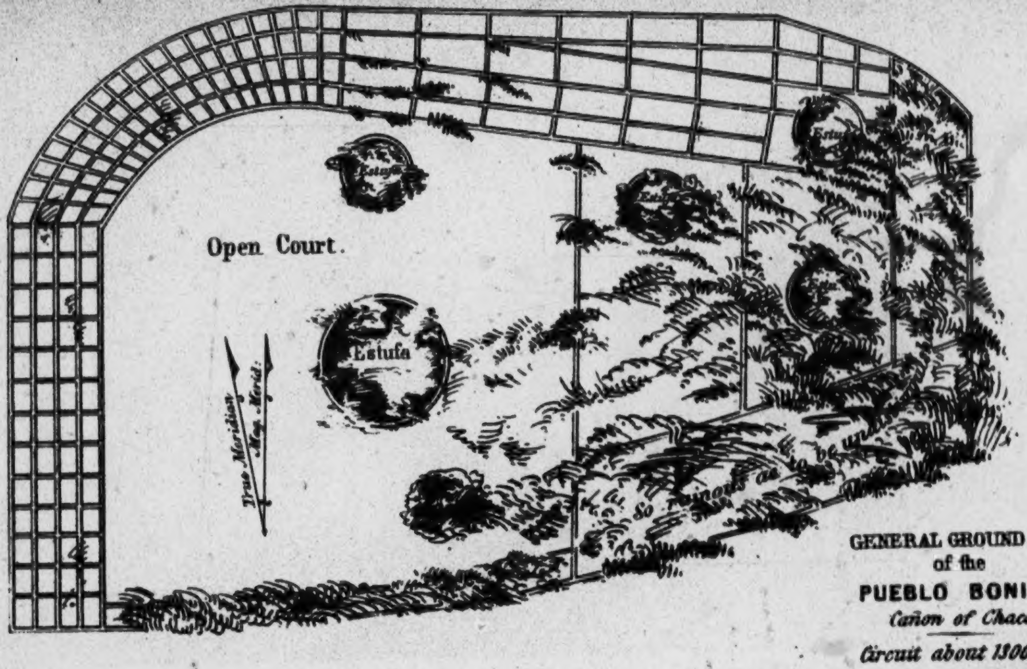
Open Court.
Estufa
Estufa
Estufa
Estufa
Estufa
True Meridian
Mag. Merid:
so ruinous as to be un

GENERAL GROUND PLAN
of the
PUEBLO BONITO.
Cañon of Chaco.

Circuit about 1300 feet.

P. S. Duval, Steam Lith. Press, Phila

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R.H. Kern del.

P. S. Duvals Steam lith. Press Philad.

INTERIOR OF A ROOM IN THE NORTH RANGE OF THE PUEBLO BONITO.

Aug. 28th - No. 6.

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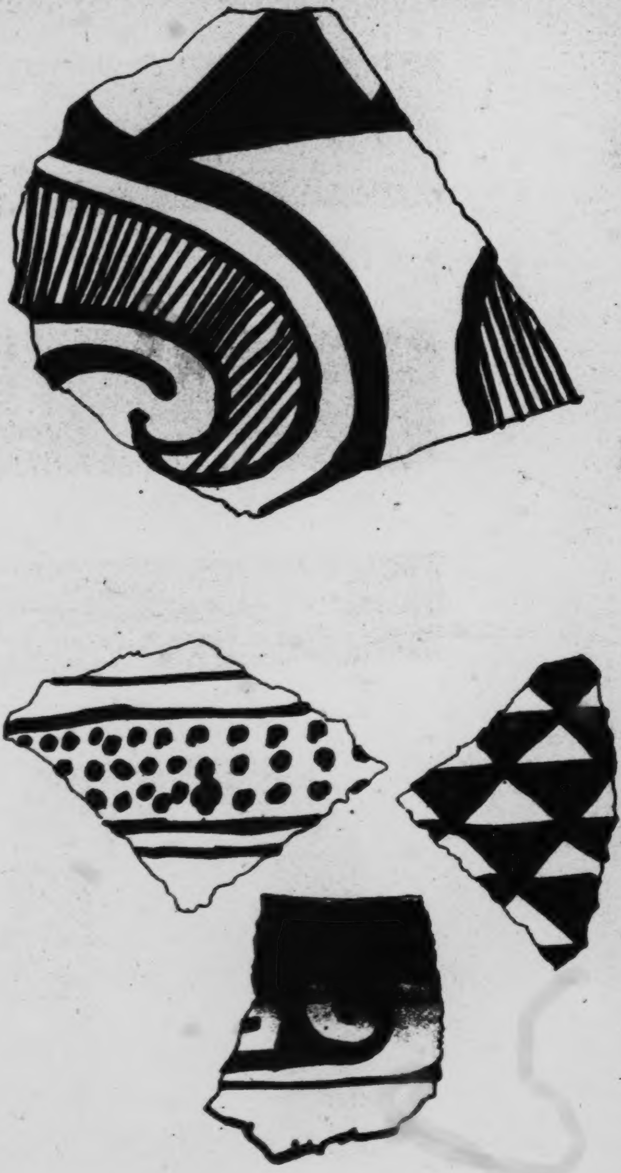

R. H. Kern del.t P. S. Duval's Steam Lith. Press Phil.a

POTTERY FOUND AT THE PUEBLO BONITO.

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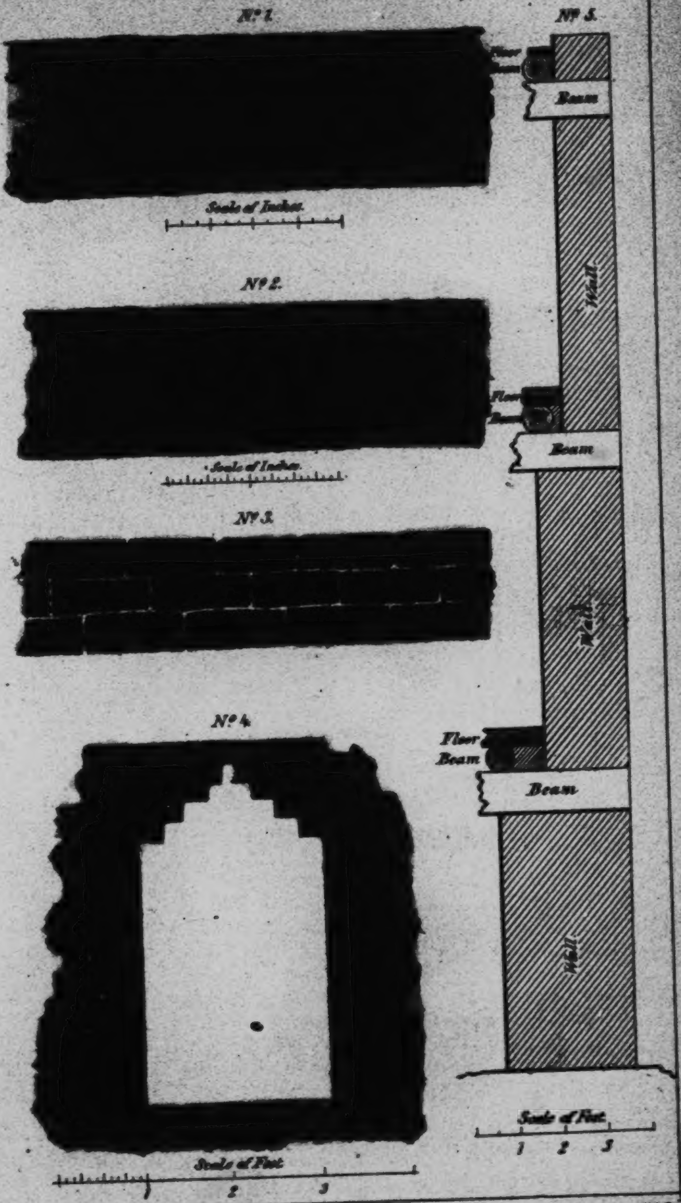
No. 1.
Scale of Inches.
No. 2.
Scale of Inches.
No. 3.
No. 4.
Scale of Feet.
1
2
3
No. 5.
Floor
Beam
Beam
Wall
Floor
Beam
Beam
Wall
Floor
Beam
Beam
Wall
Scale of Feet.
1
2
3

R. H. Kern del.

P. S. Duval's Steam lith Press, Phila.

MASONRY OF THE CHACO AND OTHER RUINS.

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OF THE
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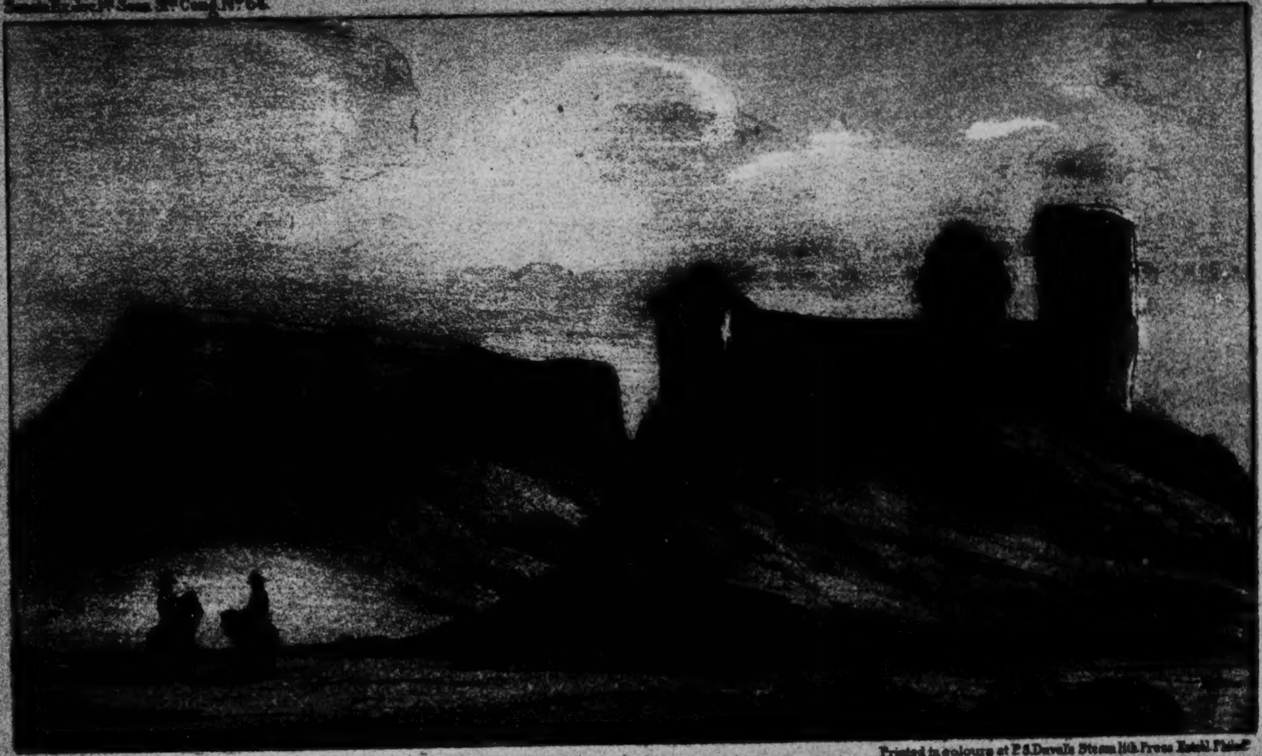

R. H. Kern del.

Printed in colours at P. S. Duval's Steam lith. Press Estab. Philad.

NATURAL SAND STONE FORMATIONS.

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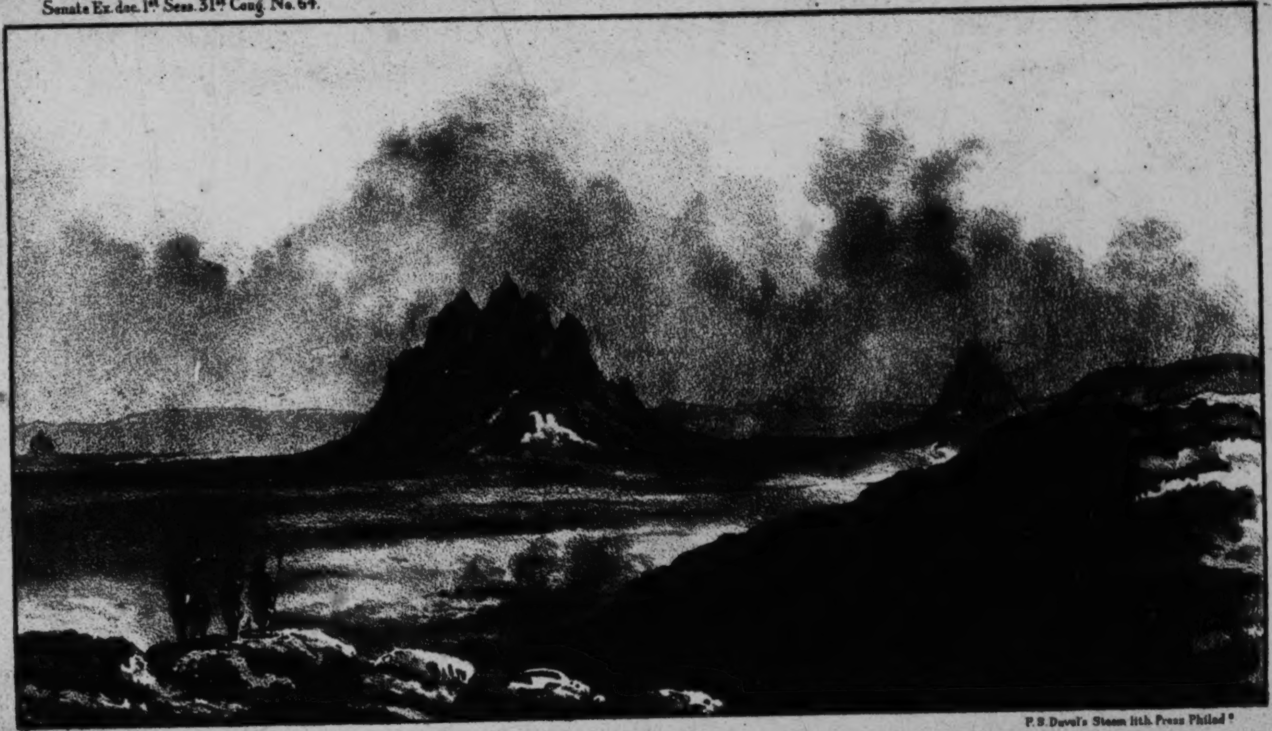

R. H. Kern del.

P. S. Duval's Steam lith. Press Philada

PEAKS OF LOS OJOS CALIENTES.

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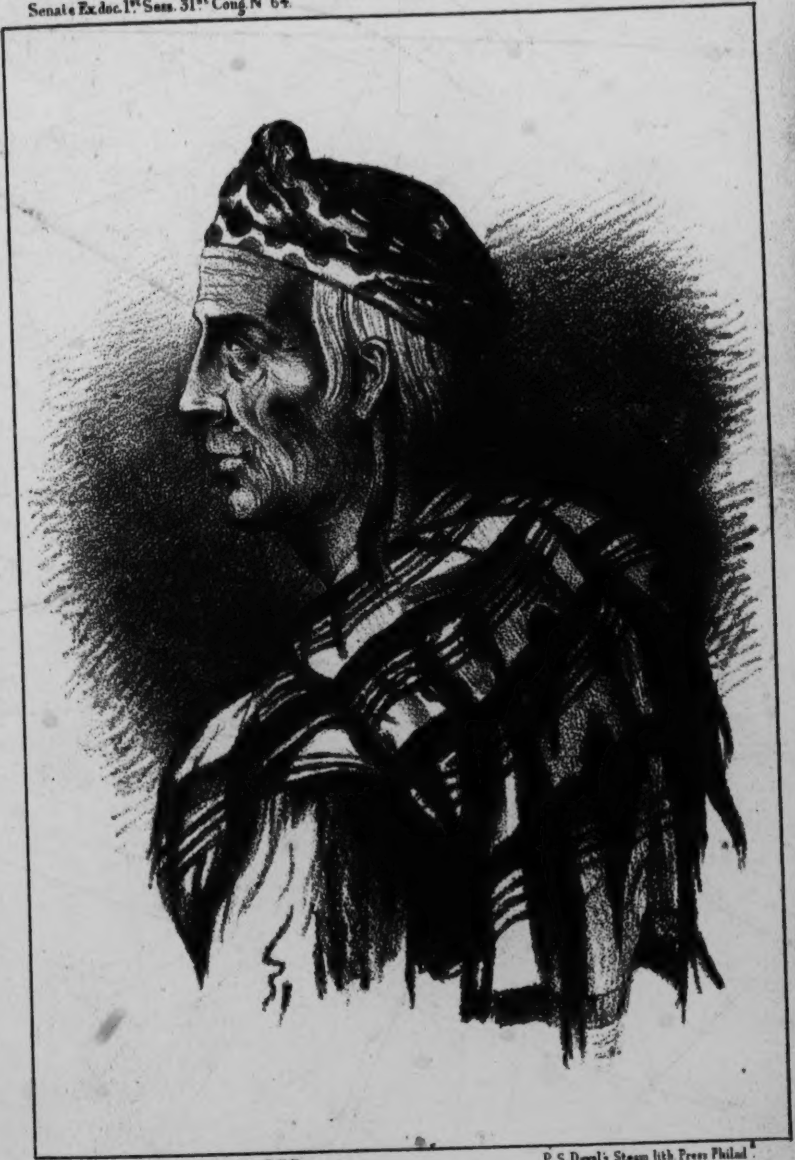

Drawn by E. M. Kern from a sketch by R. H. Kern. P. S. Duval's Steam lith. Press Philad.

NARBONA

Head Chief of the Navajos.

Aug. 31st.

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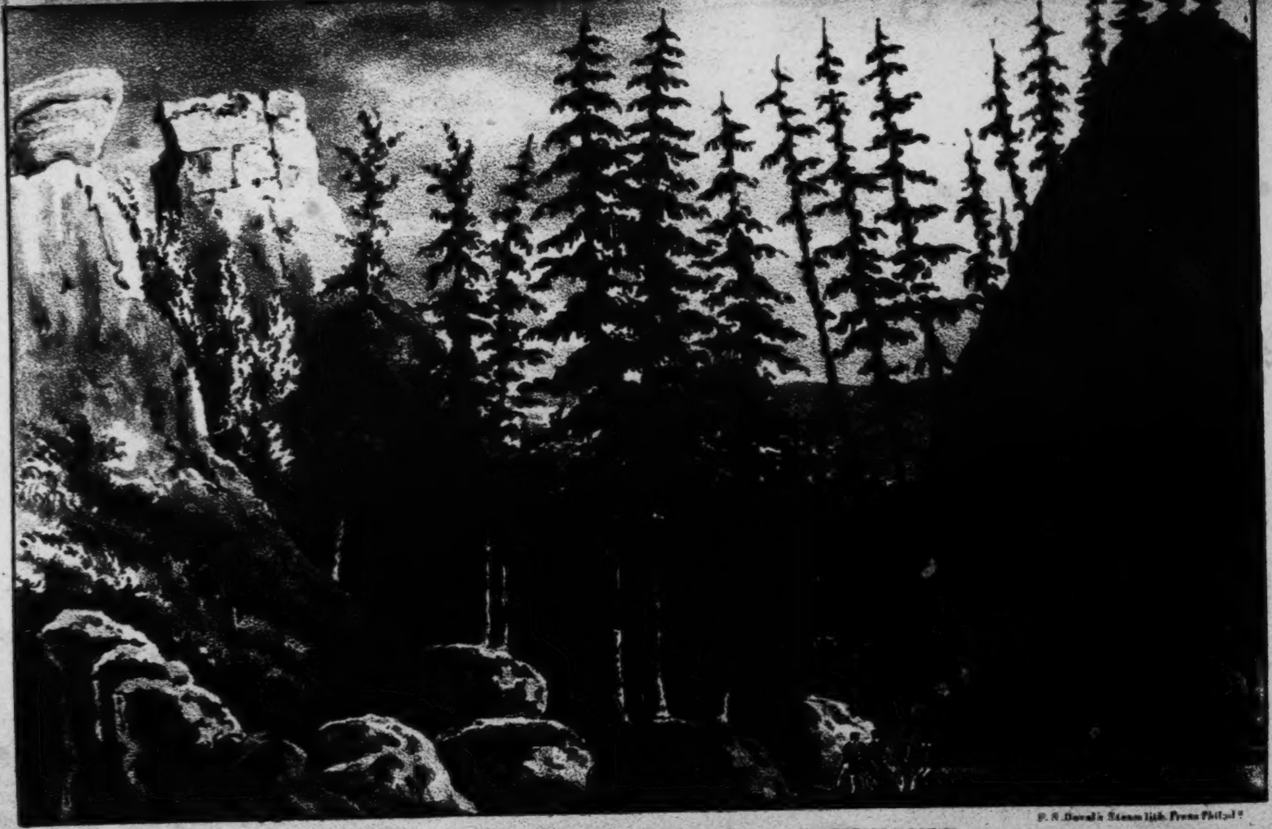

R. H. Kern del.

P. S. Duval's Steam lith. Press Philad.

PASS WASHINGTON, TUNE-CHA MOUNTAINS.

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Pl. 46.

R. H. Kern delt.

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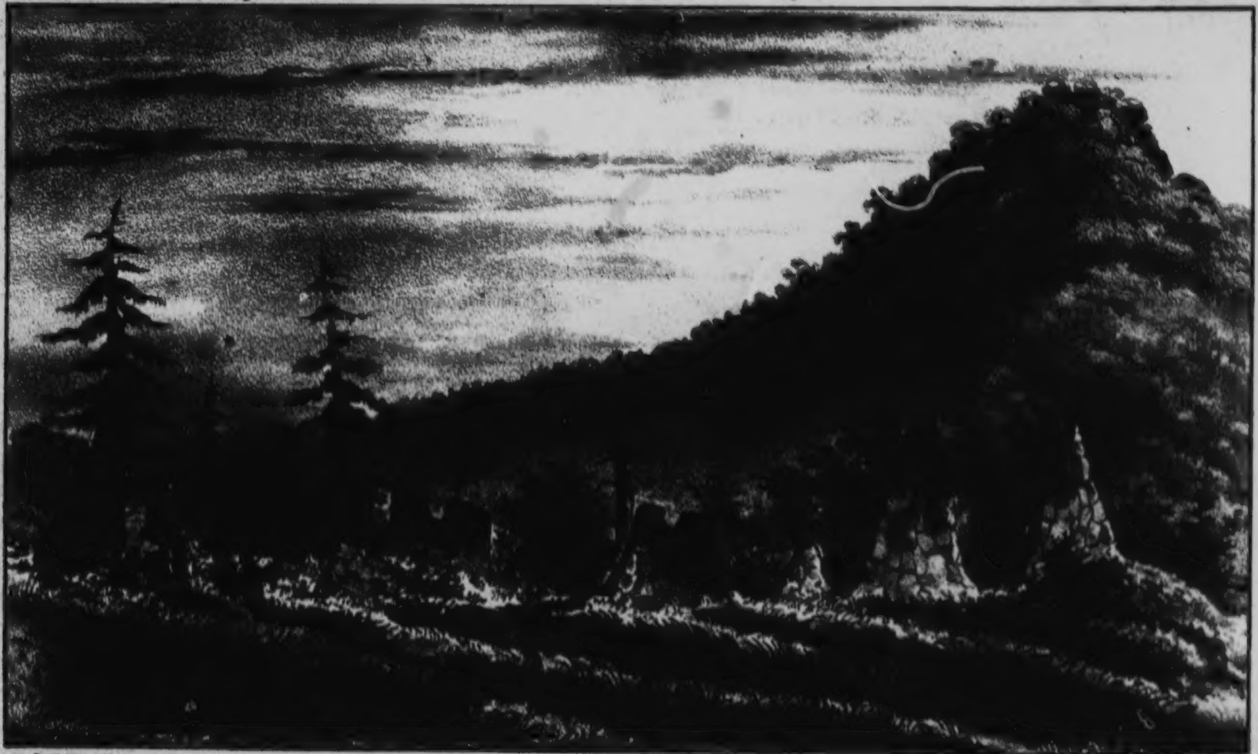

R. H. Kern delt.

P. S. Duval's Steam lith. Press Philad.

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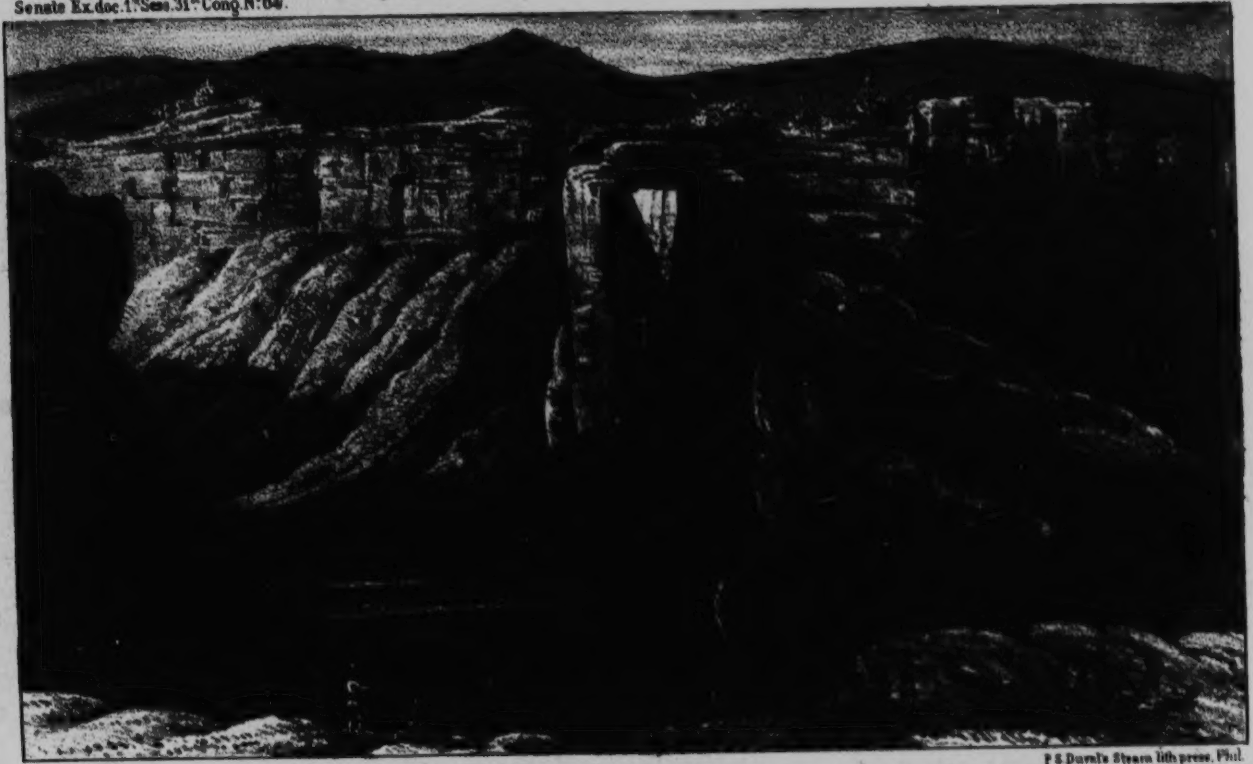
Senate Ex. doc. 1st Sess. 31st Cong. N° 64.

Pl. 48.



R. H. Kern del^t

P S Duval's Steam lith press. Phil.

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OF THE
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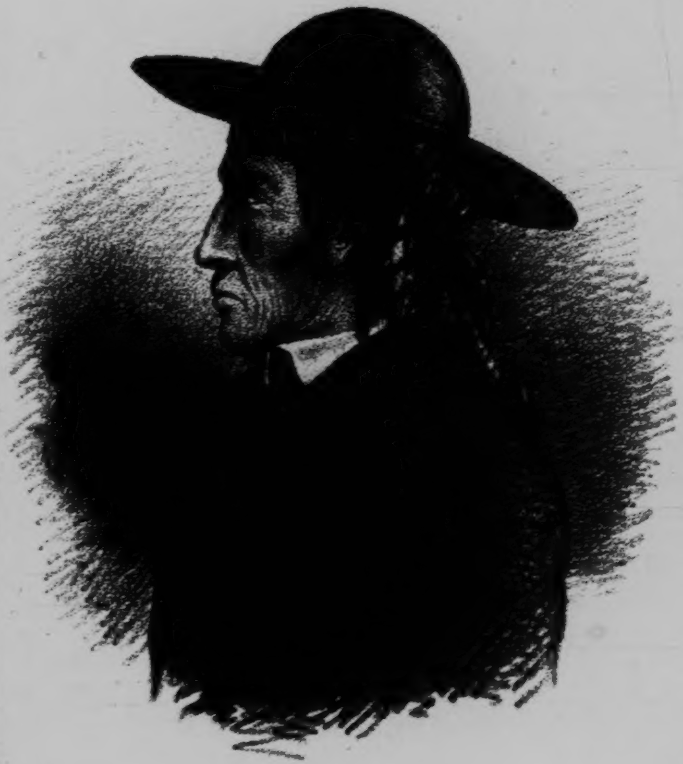

Drawn by E. M. Kern from a sketch by R. H. Kern.

P. S. Duval's Steam lith Press Philada.

MARIANO MARTINEZ

Chief of the Navajo Indians.

Sept. 8th

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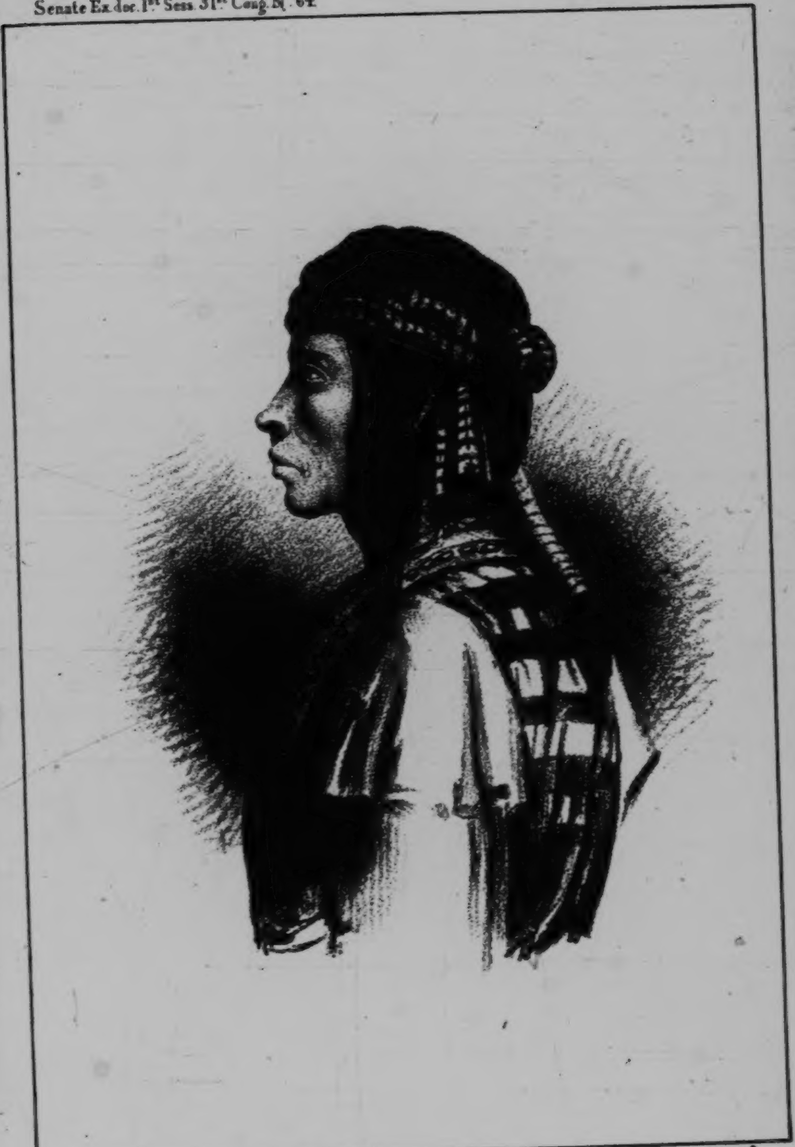

Drawn by E. M. Kern from a sketch by R. H. Kern.
P. S. Duval's Steam lith. Press Philad.

CHAPATON

Chief of the S. Juan Navajos.

Sept 8th.

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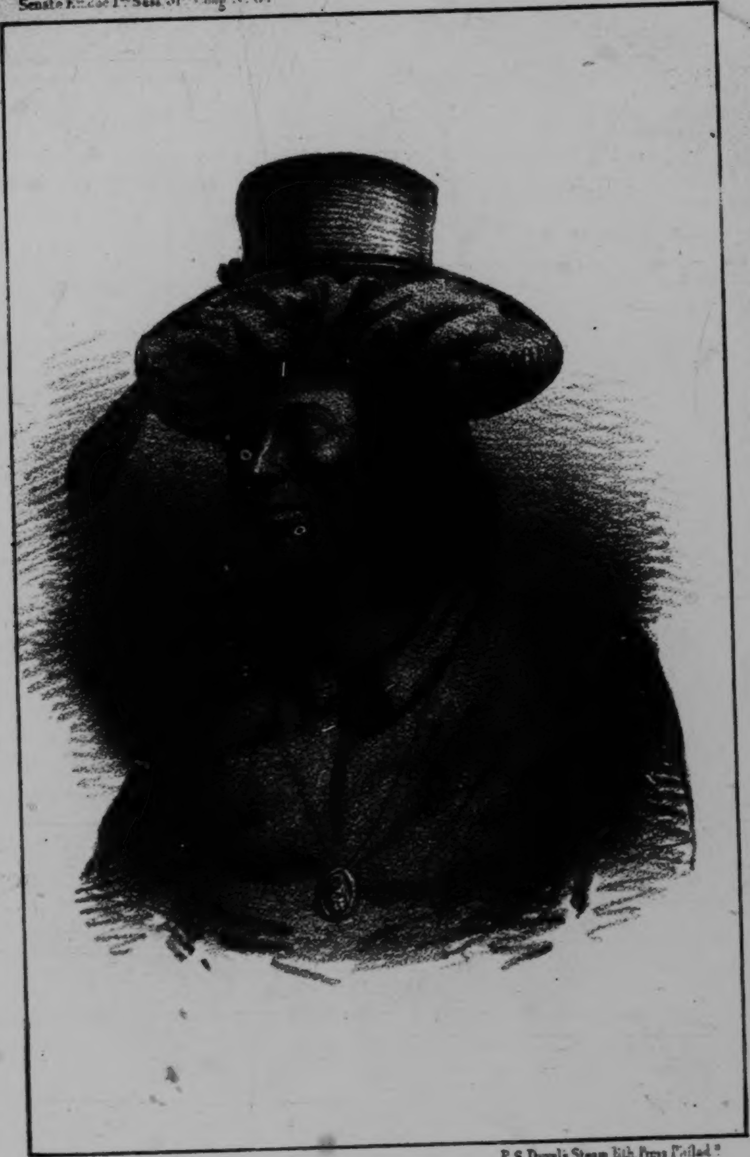

E. M. Kern delt.

P. S. Duval's Steam lith. Press Philada.

CHE-KI-WAT-TE-WA

(Yellow Wolf) a Moqui.

Sept. 8th

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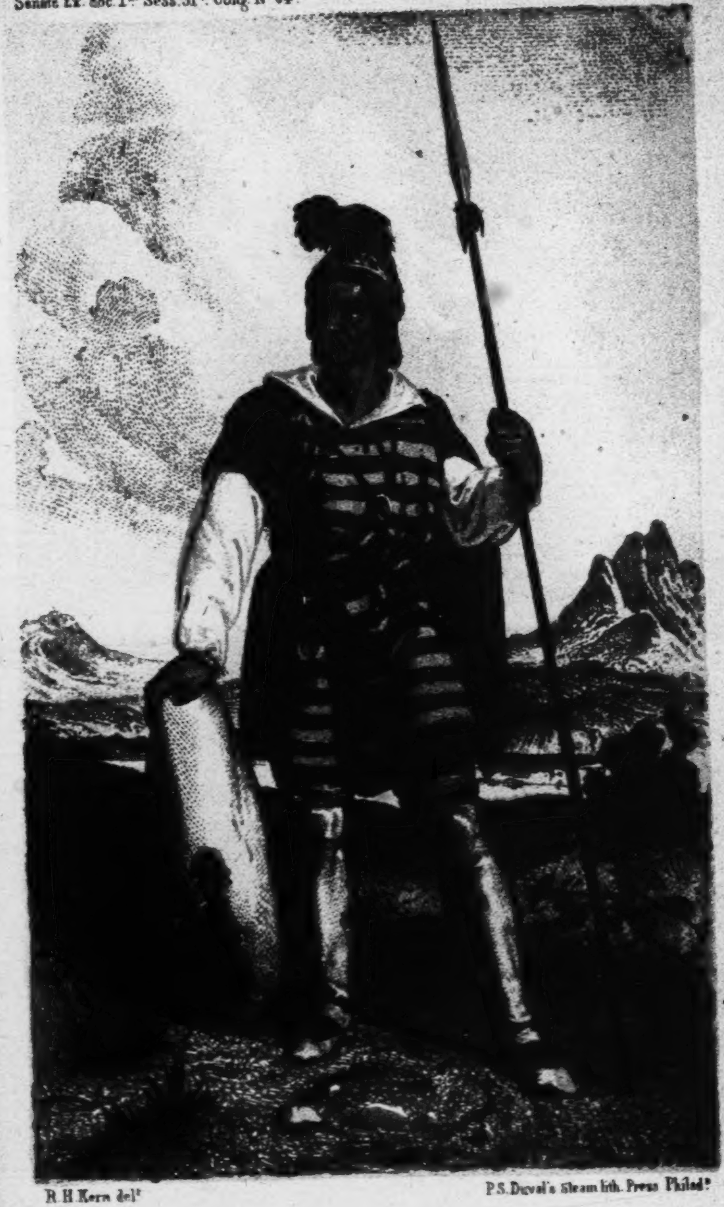
OF THE
UNIVERSITY OF ILLINOIS.



R. H. Kern delt

P. S. Duval's Steam lith. Press Philada

NAVAJO COSTUME.

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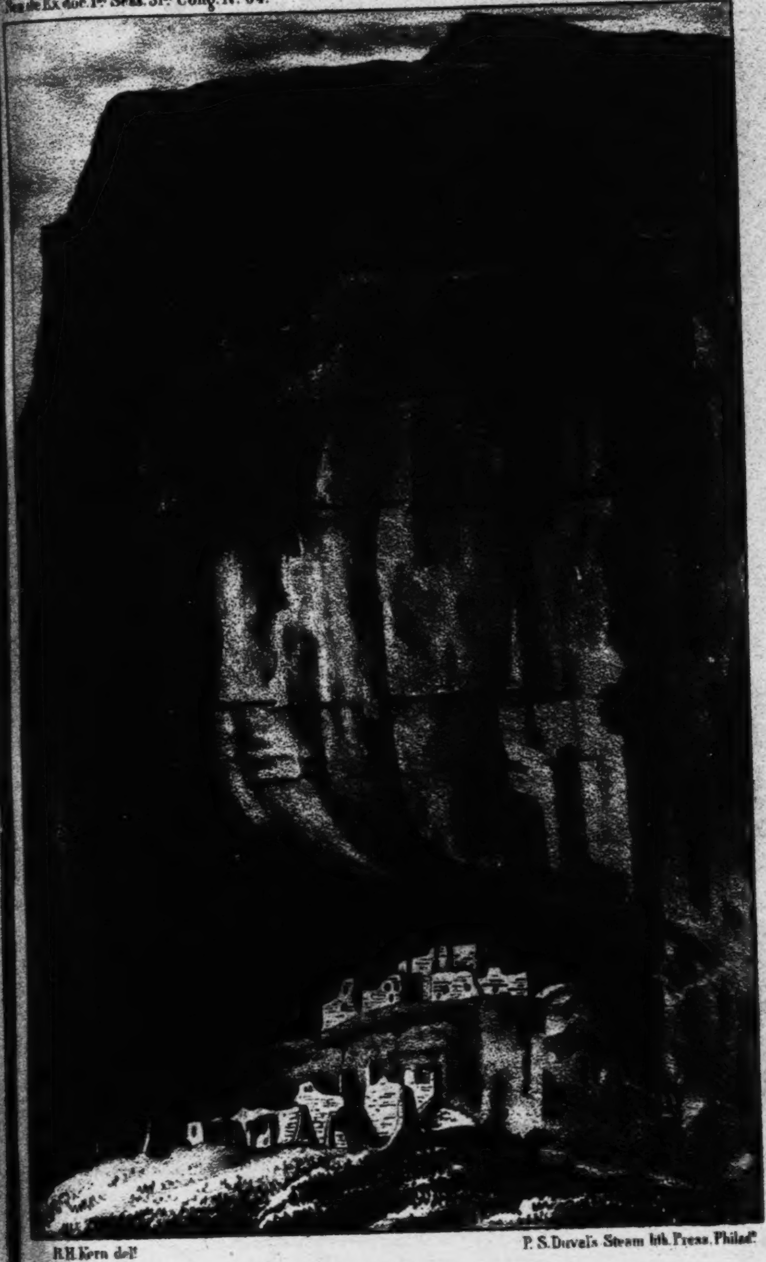

R. H. Kern delt

P. S. Duval's Steam lith. Press, Philada

RUINS OF AN OLD PUEBLO

in the Cañon of Chelly.-Sept. 8th

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OF THE
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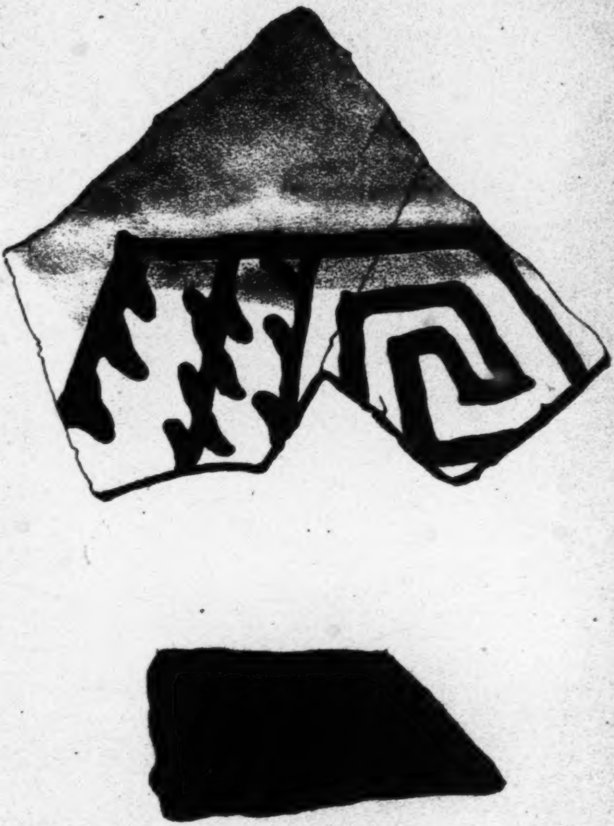

R. H. Kern del!

P. S. Duval's steam lith. Press. Philada.

POTTERY FOUND AT THE PUEBLO,
in the Cañon of Chelly.

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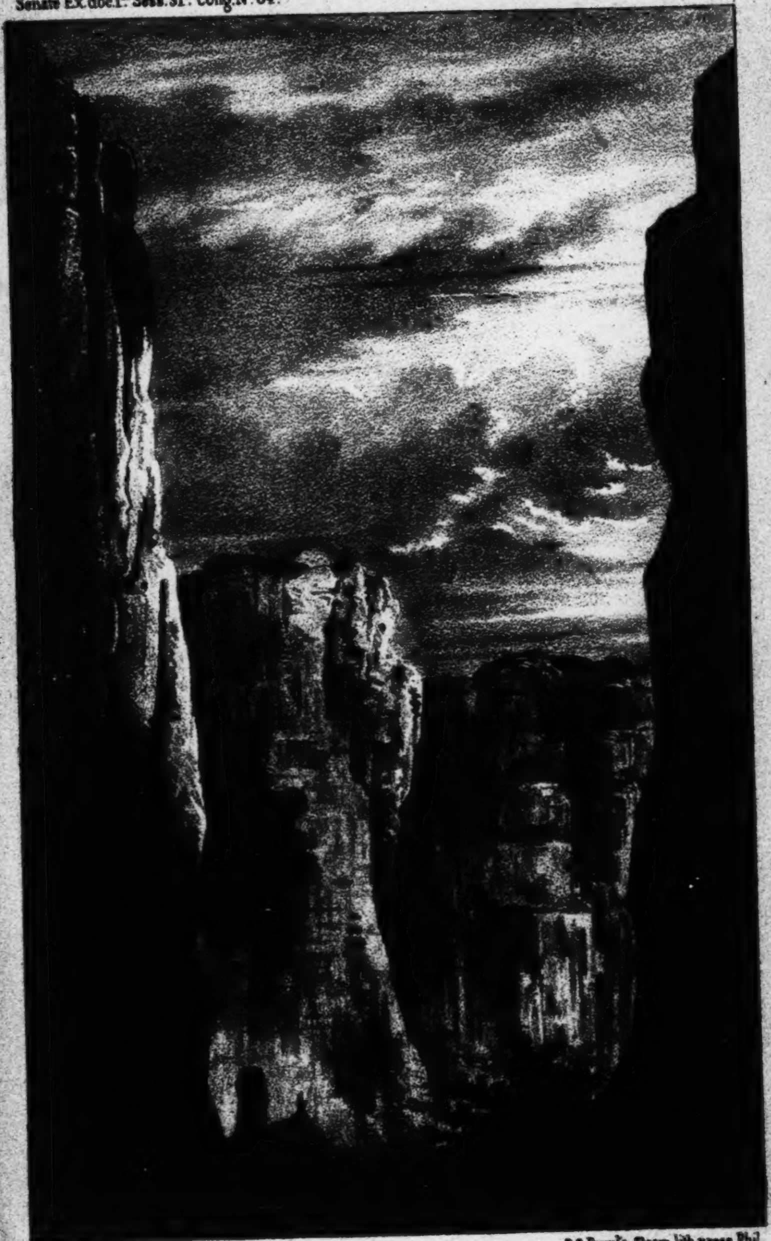
OF THE
UNIVERSITY of ILLINOIS.



R. H. Kern del.

P. S. Duval's Steam lith. press Phil.

CAÑON OF CHELLY,
eight miles above the mouth. — Sept. 8th.

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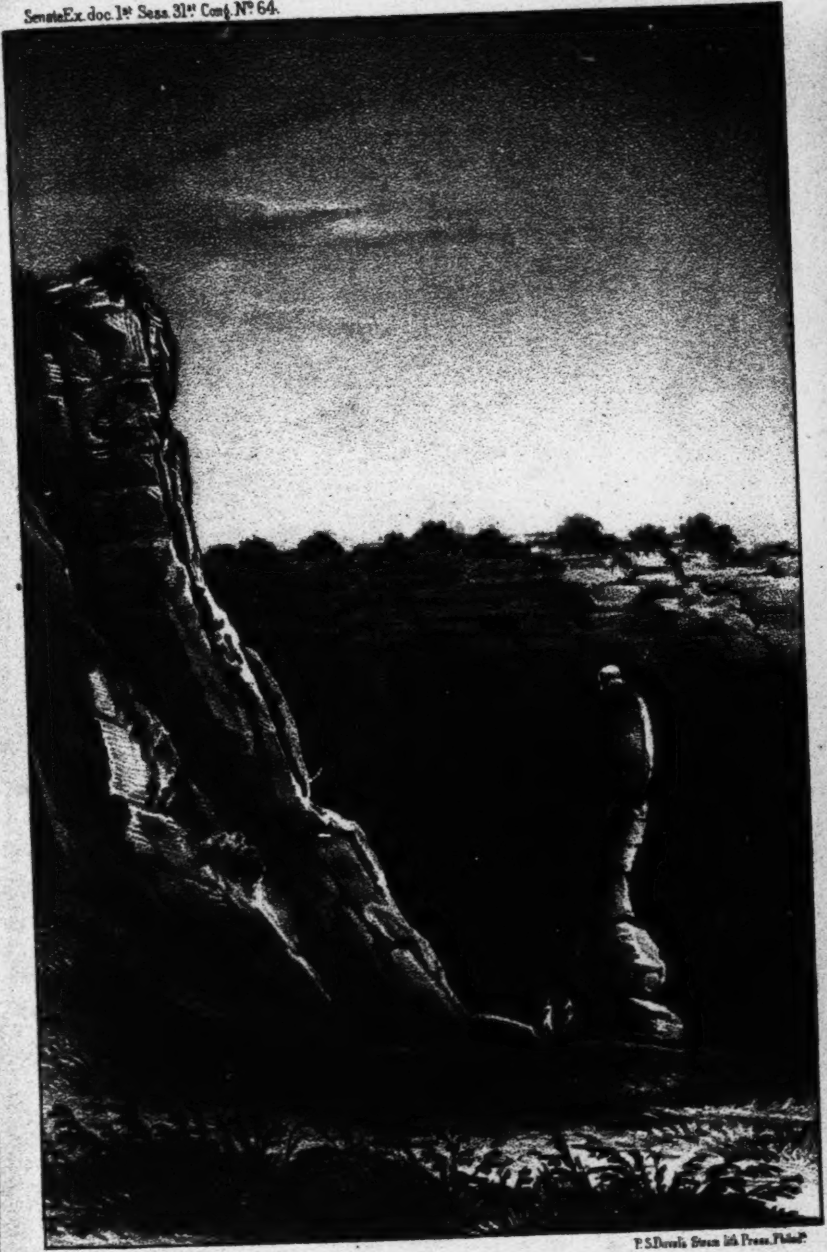

R. H. Kern delt.

P. S. Duval's Steam lith Press. Philada.

NATURAL SANDSTONE FORMATION,

near Camp 21. Sept 11.

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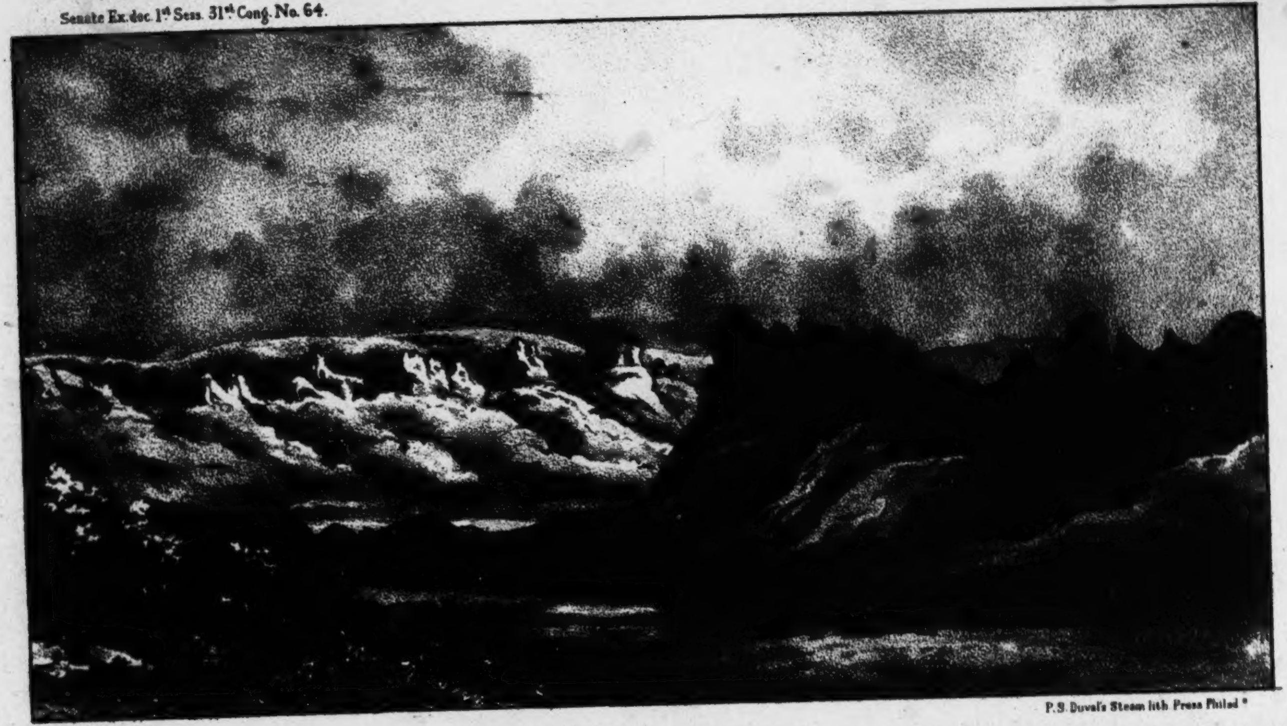
Pl. 57.



R. H. Kern delt.

P. S. Duval's Steam lith Press Philada

TRAP DYKE AND SAND STONE FORMATIONS,

between Camps 21 and 22.—Sept. 12th

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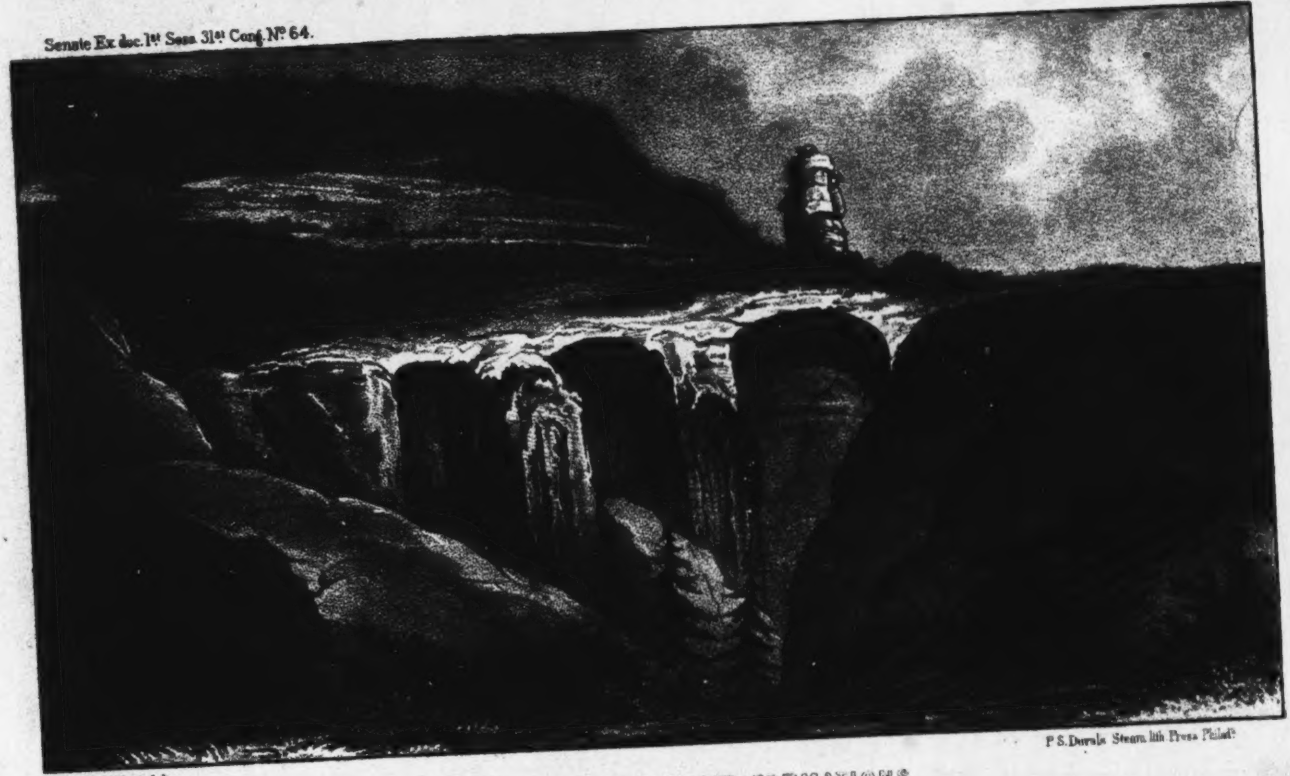

R. H. Kern del.

P. S. Duval's Steam lith. Press Philad.

NATURAL SANDSTONE FORMATIONS
near Camp 23. Sept. 13th

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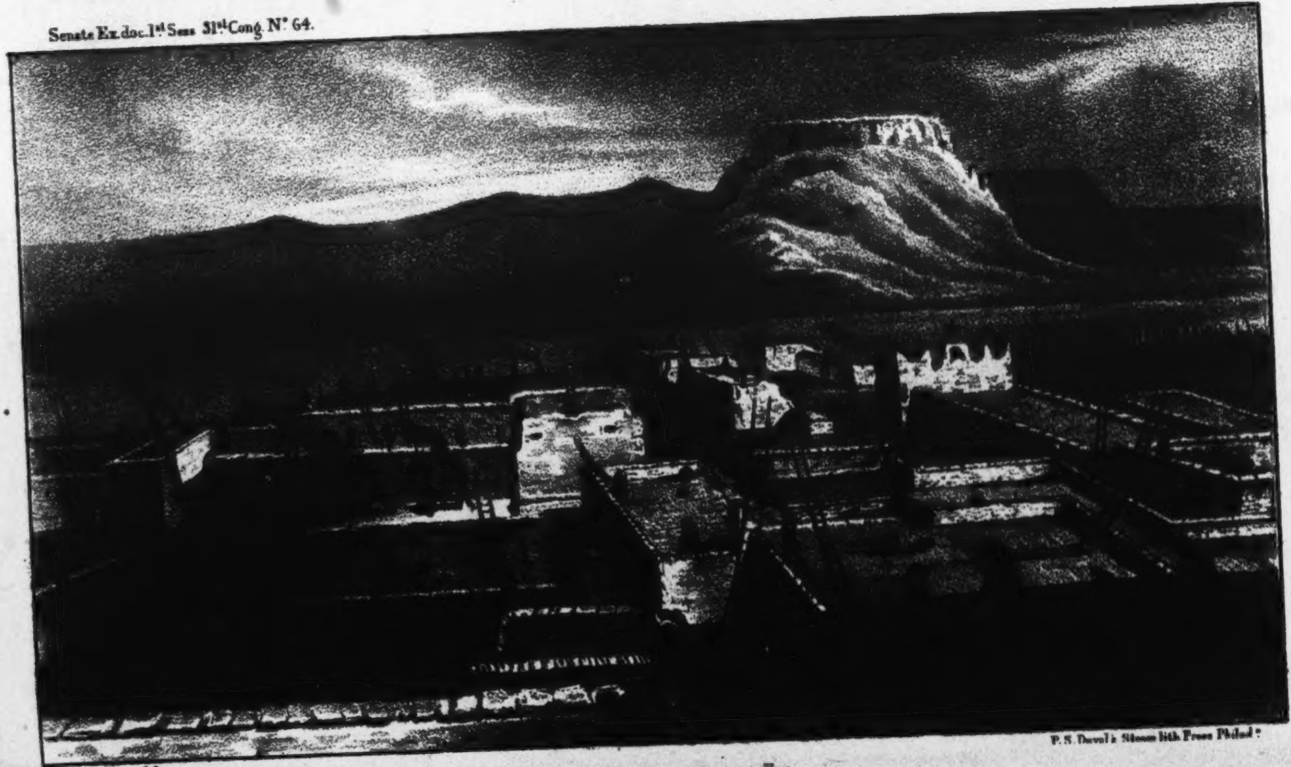
Pl. 59.



R. H. Kern delt.

P. S. Duval's Steam lith. Press Philad.

PUEBLO OF ZUÑI.

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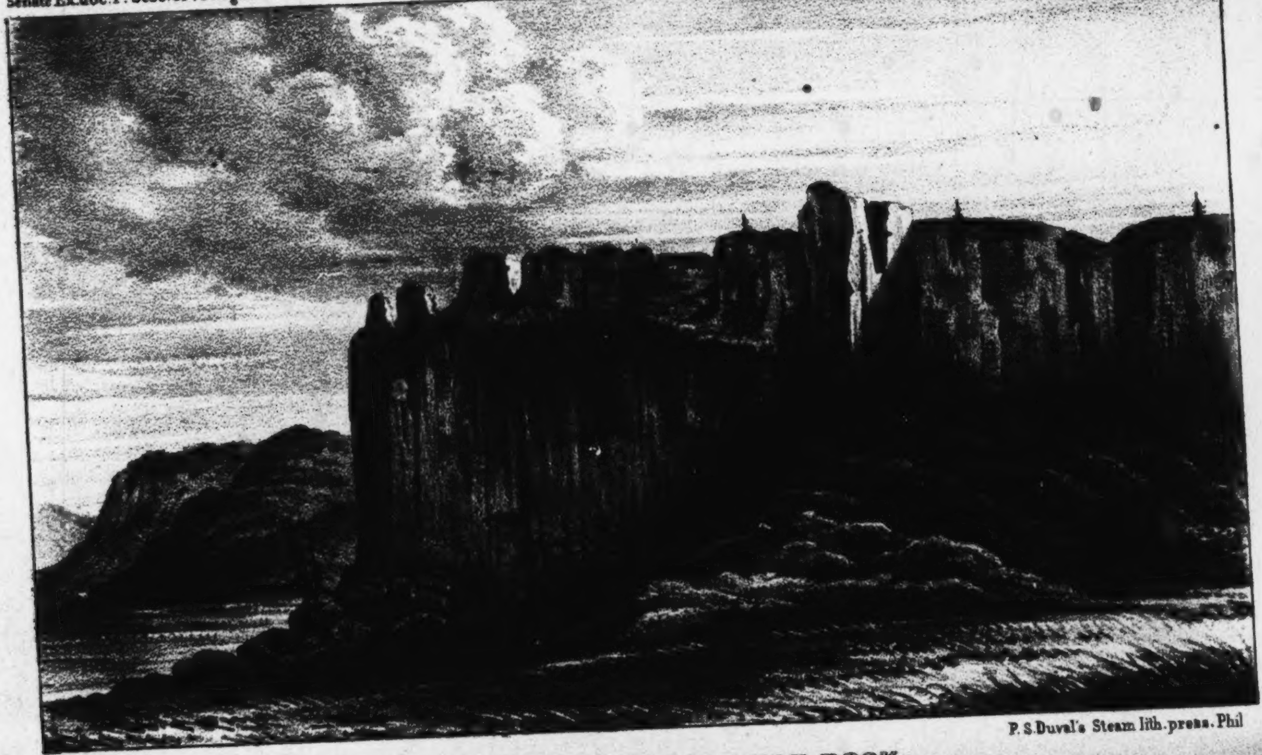

R. H. Kern delt

P. S. Duval's Steam lith. press. Phil

NORTH FACE OF INSCRIPTION ROCK.
Sept. 17th

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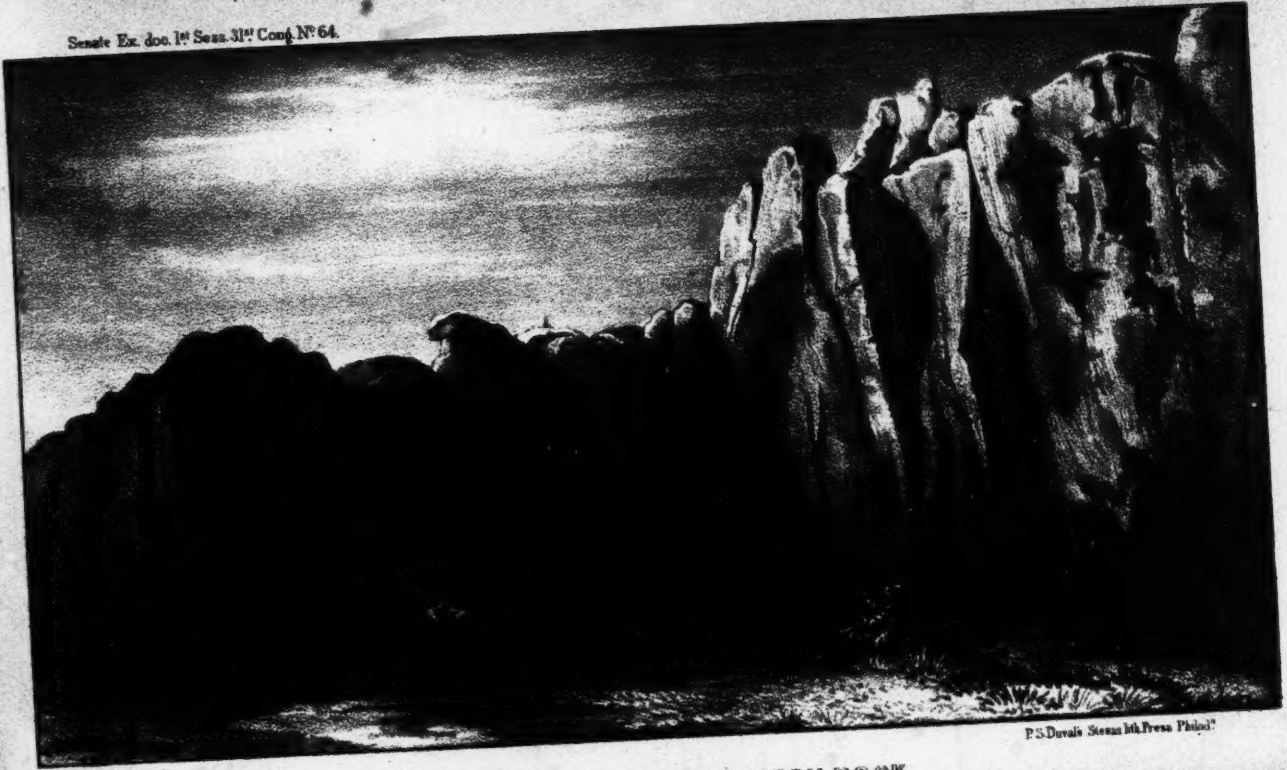
Pl. 61.



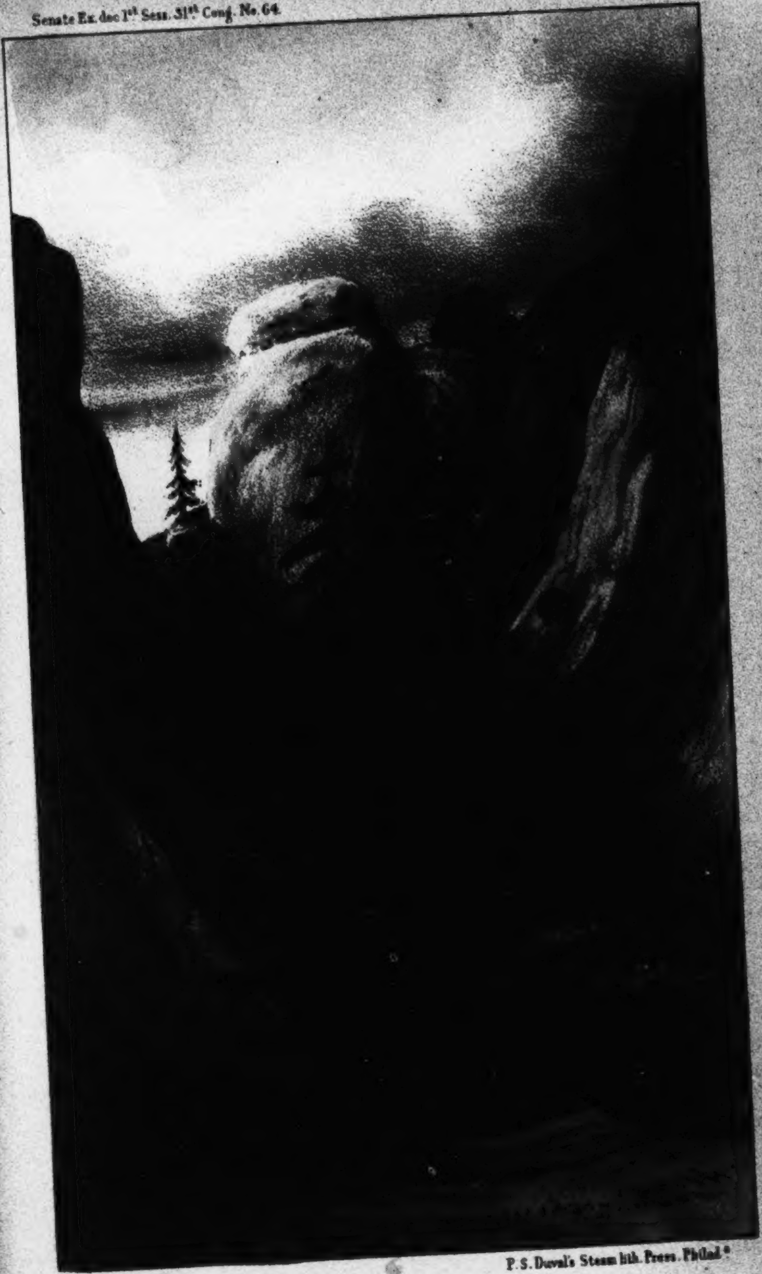
R.H.Kern delt.

P.S.Duval's Steam lith.Press Philad.a

SOUTH FACE OF INSCRIPTION ROCK

Sept. 17.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS.

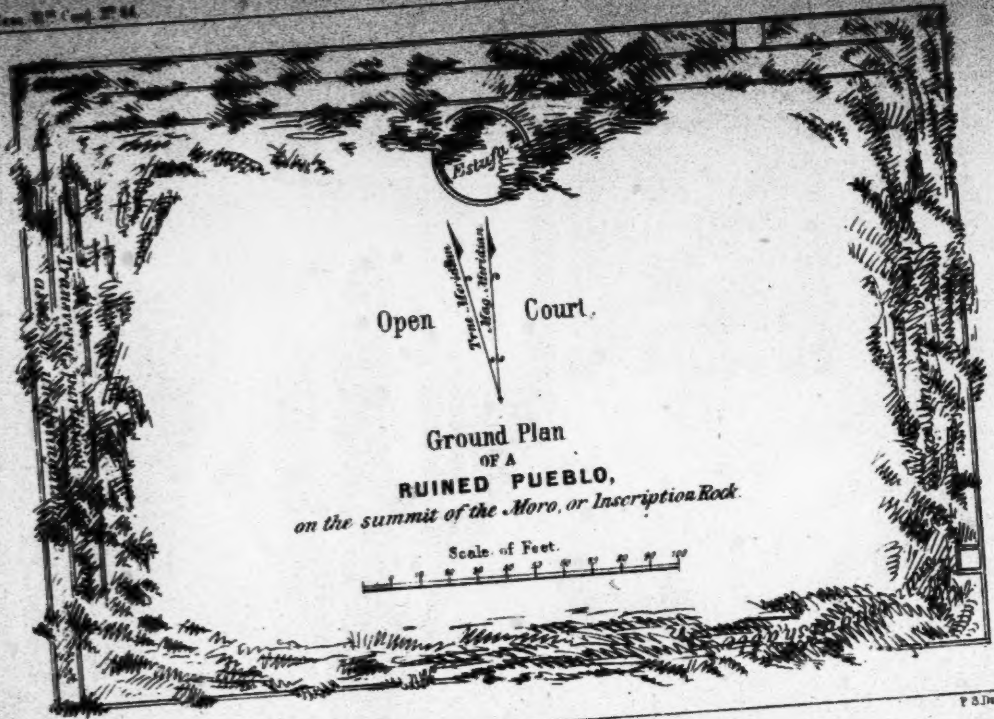


R. H. Kern delt.

P. S. Duval's Steam lith. Press. Philada.

SPRING AT INSCRIPTION ROCK.

LIBRARY
OF THE
UNIVERSITY OF I

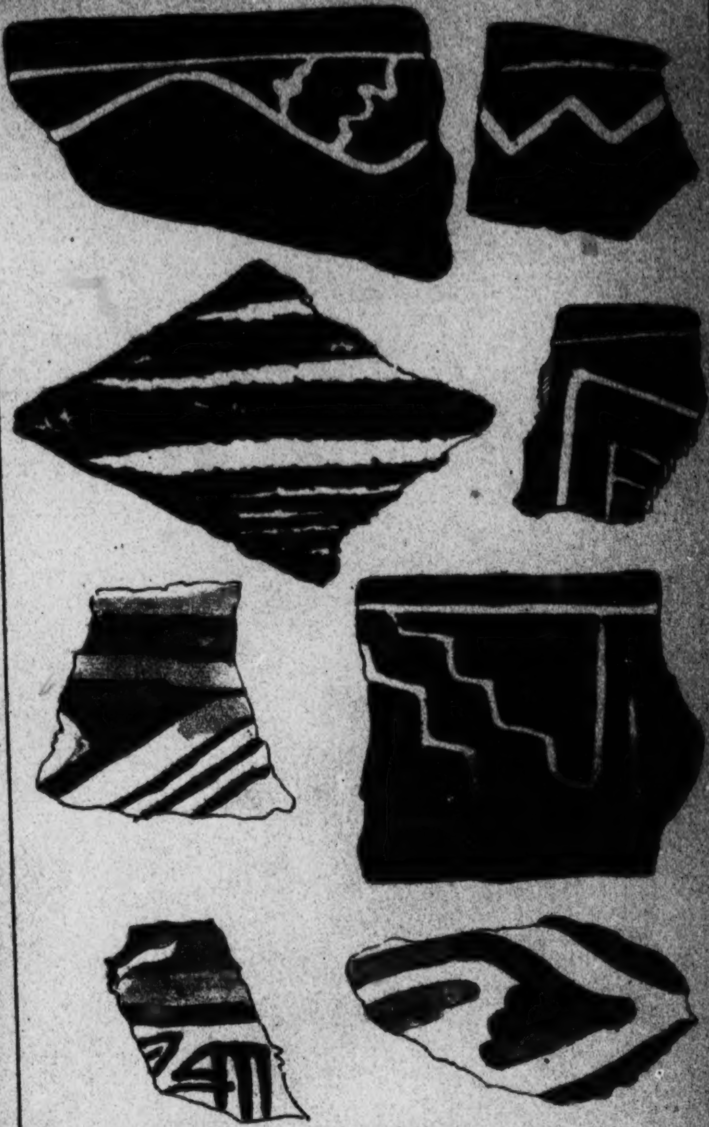

Estufa
True Meridian
Mag. Meridian
Open
Court.
Transverse partitions
Scale of Feet.
0
10
20
30
40
50
60
70
80
90
100

Ground Plan
OF A
RUINED PUEBLO,
on the summit of the Moro, or Inscription Rock.

R. H. Kern, del.

P. S. Duval Steam Lith Press, Phila.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS.

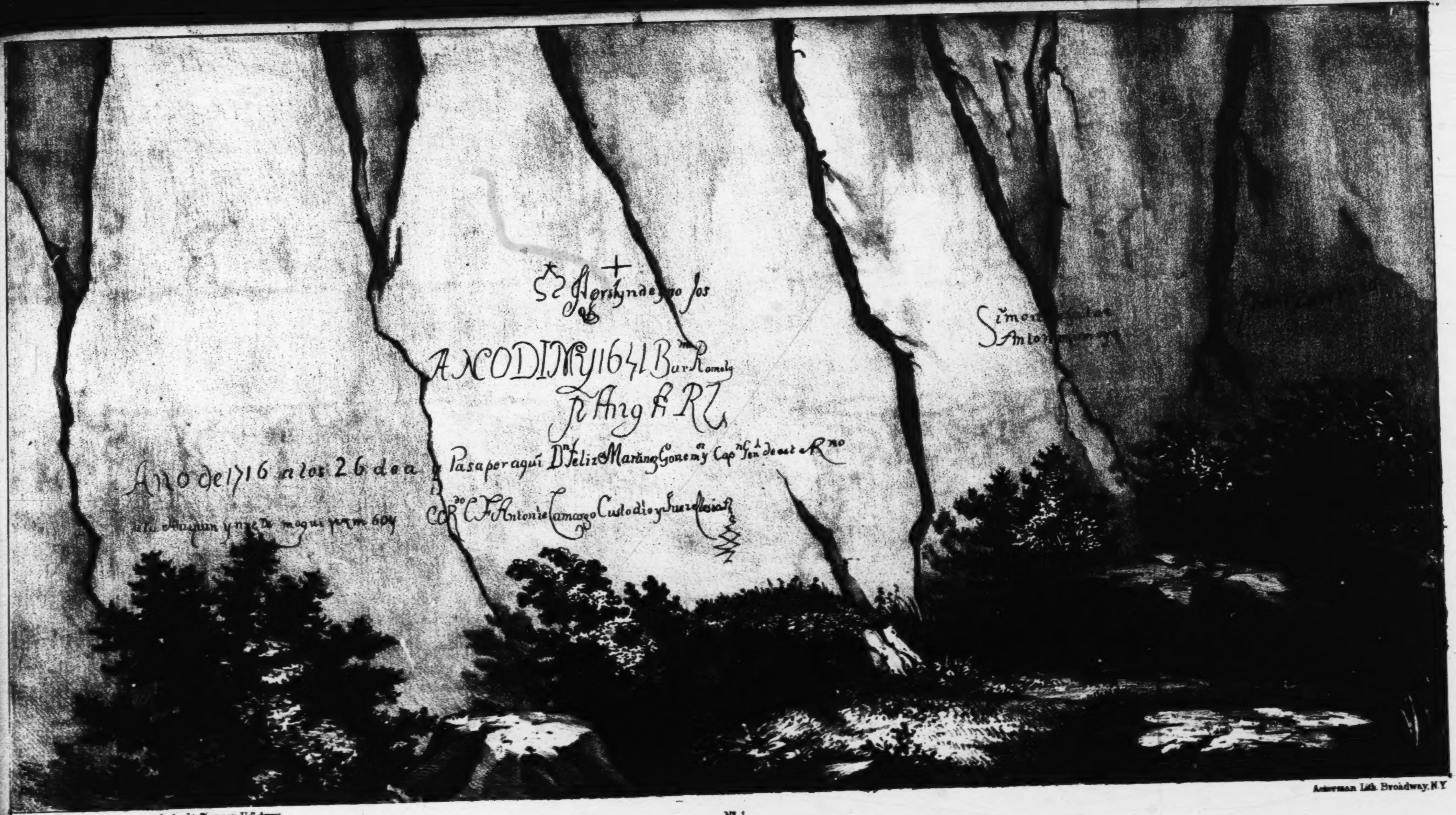


R. H. Kern del.

Printed in Colours by P. S. Duval's Steam lith. Press Philad.

POTTERY FOUND AT THE PUEBLO,

on the summit of the Moro or Inscription Rock.


ANO DE 1641 Bar Romelo
Año de 1716 a los 26 de a
Pasa por aqui Dn Feliz Martinez Gonem y Capn Genl
Simon
Anton

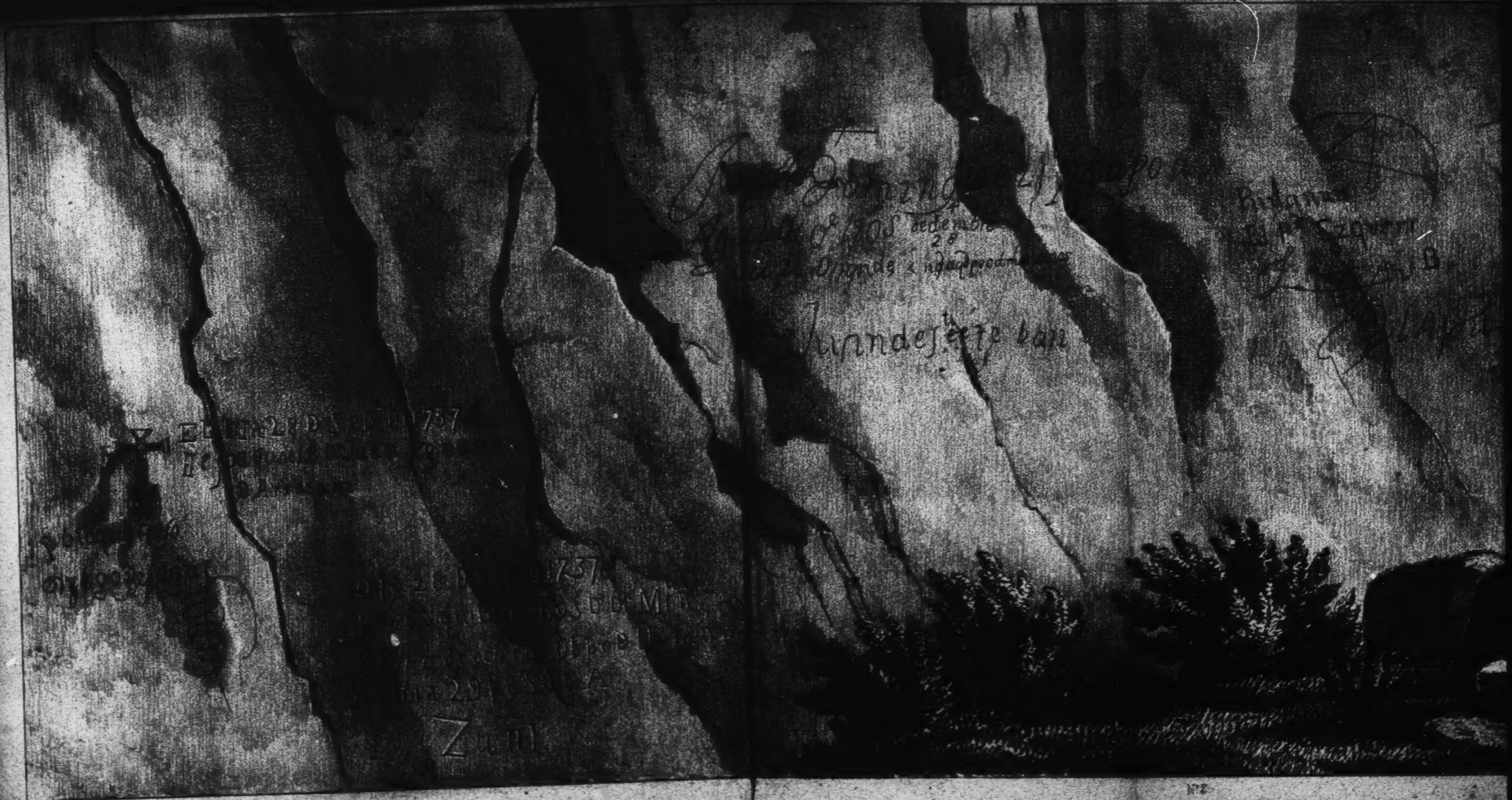
Drawn by R. H. Kern, from copies made by Lt. Simpson, U.S. Army.

Ackerman Lith. Broadway, N.Y.

No. 1.

INSCRIPTIONS ON NORTH FACE OF INSCRIPTION ROCK.

Scale of feet.

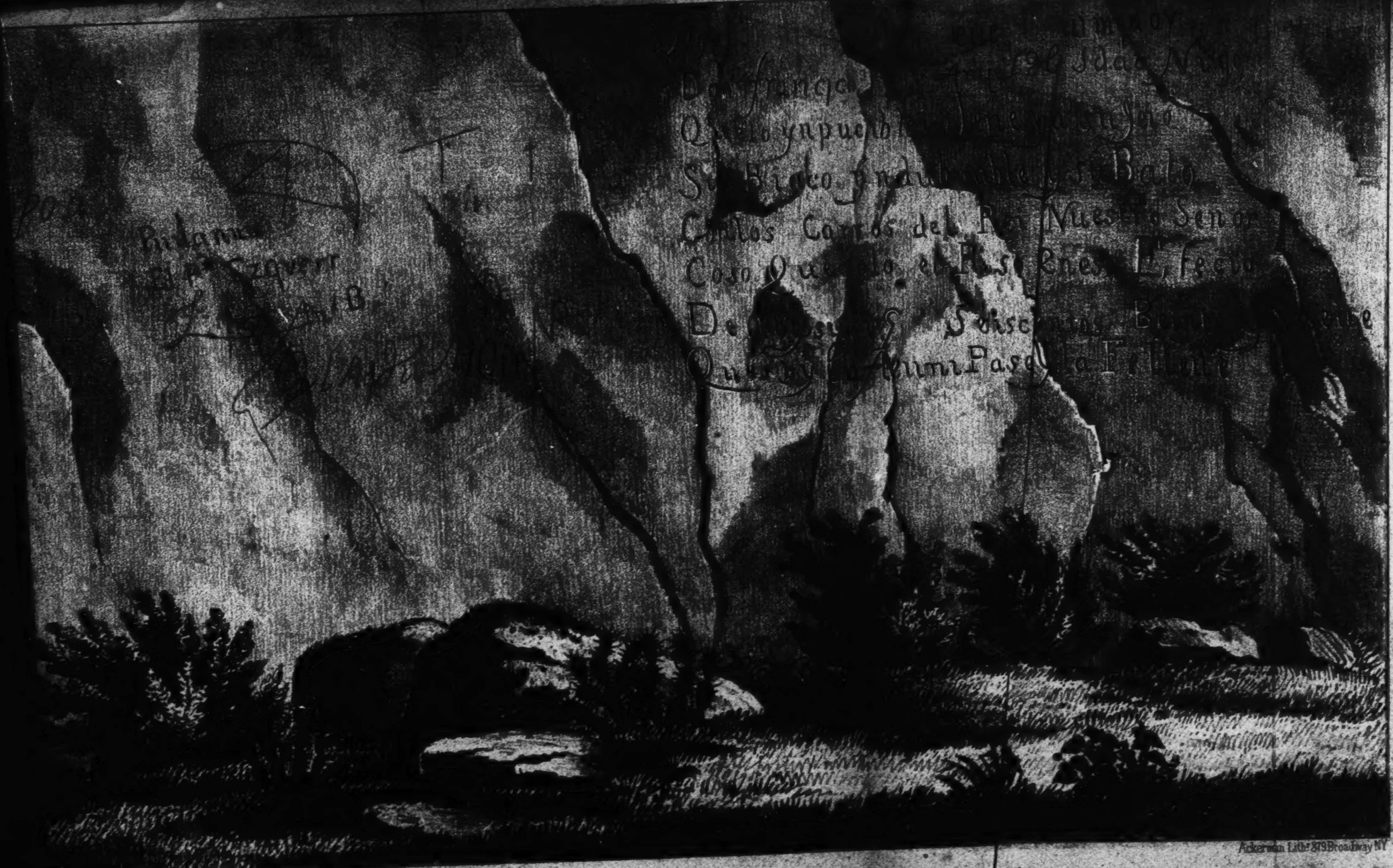


Drawn by R. H. Kern

Nº 2.

INSCRIPTIONS ON NORTH FACE OF INSCRIPTION ROCK.

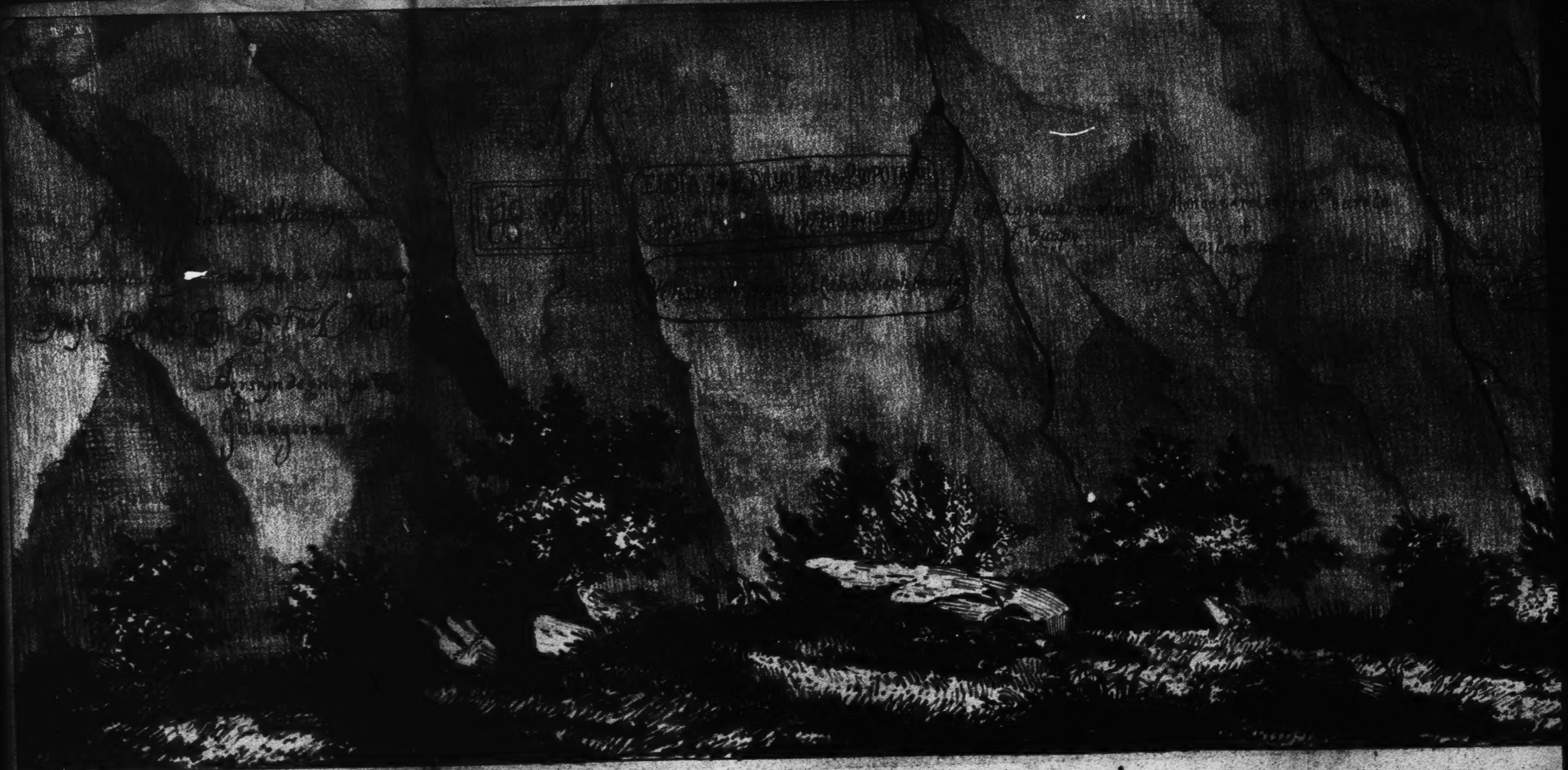
Scale of Feet


Dn francisco
Que yn pueblo
Su Risco yndubitable
Carlos ... del Rey Nuestro Señor
Coso Que ... el Paso
Quien ... Pase

Ackerman Lith. 379 Broadway NY

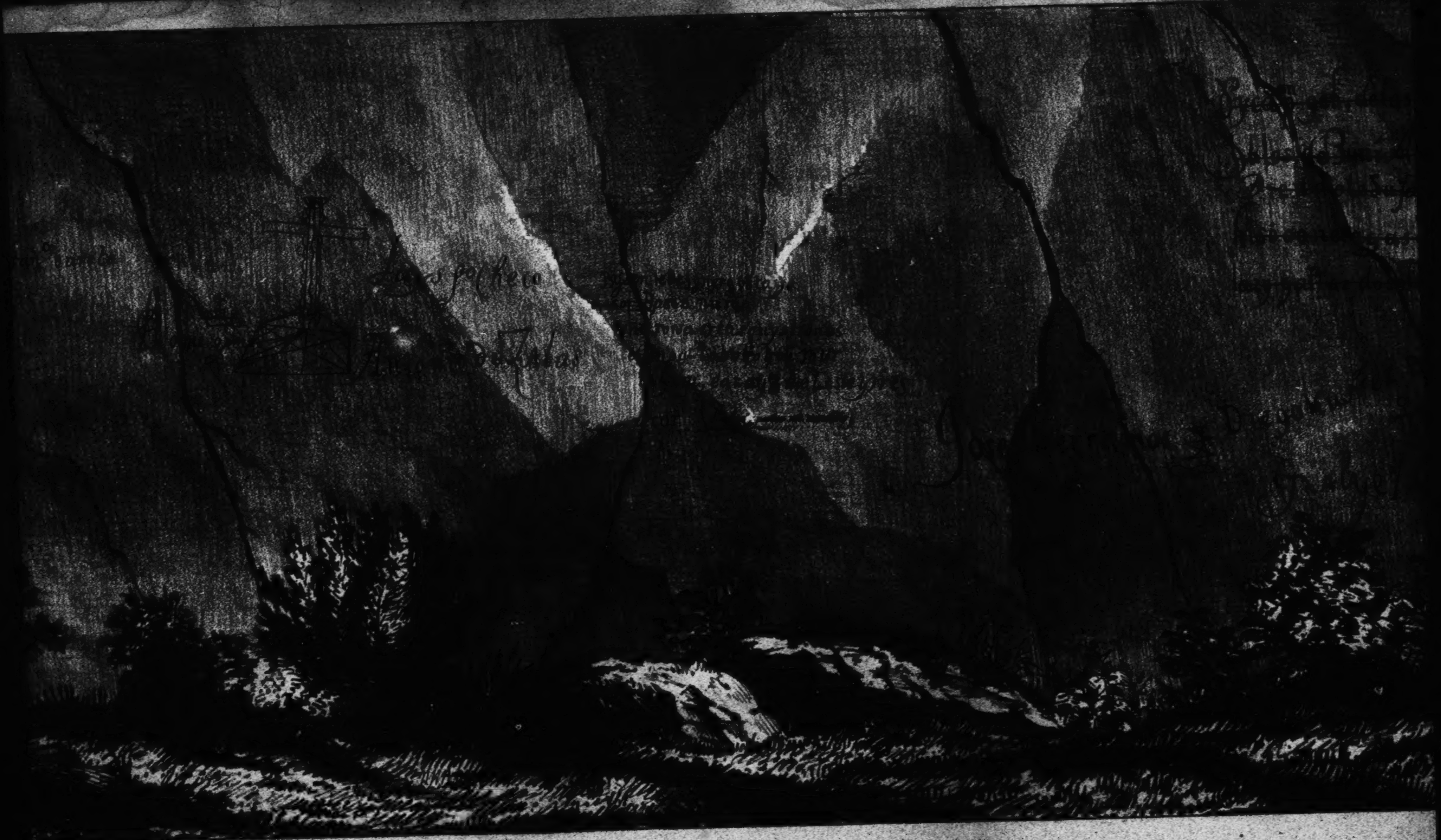
No 2

NORTH FACE OF INSCRIPTION ROCK



Drawn by R.H. Kern from copies made by Lt Simpson, USA

INSCRIPTIO

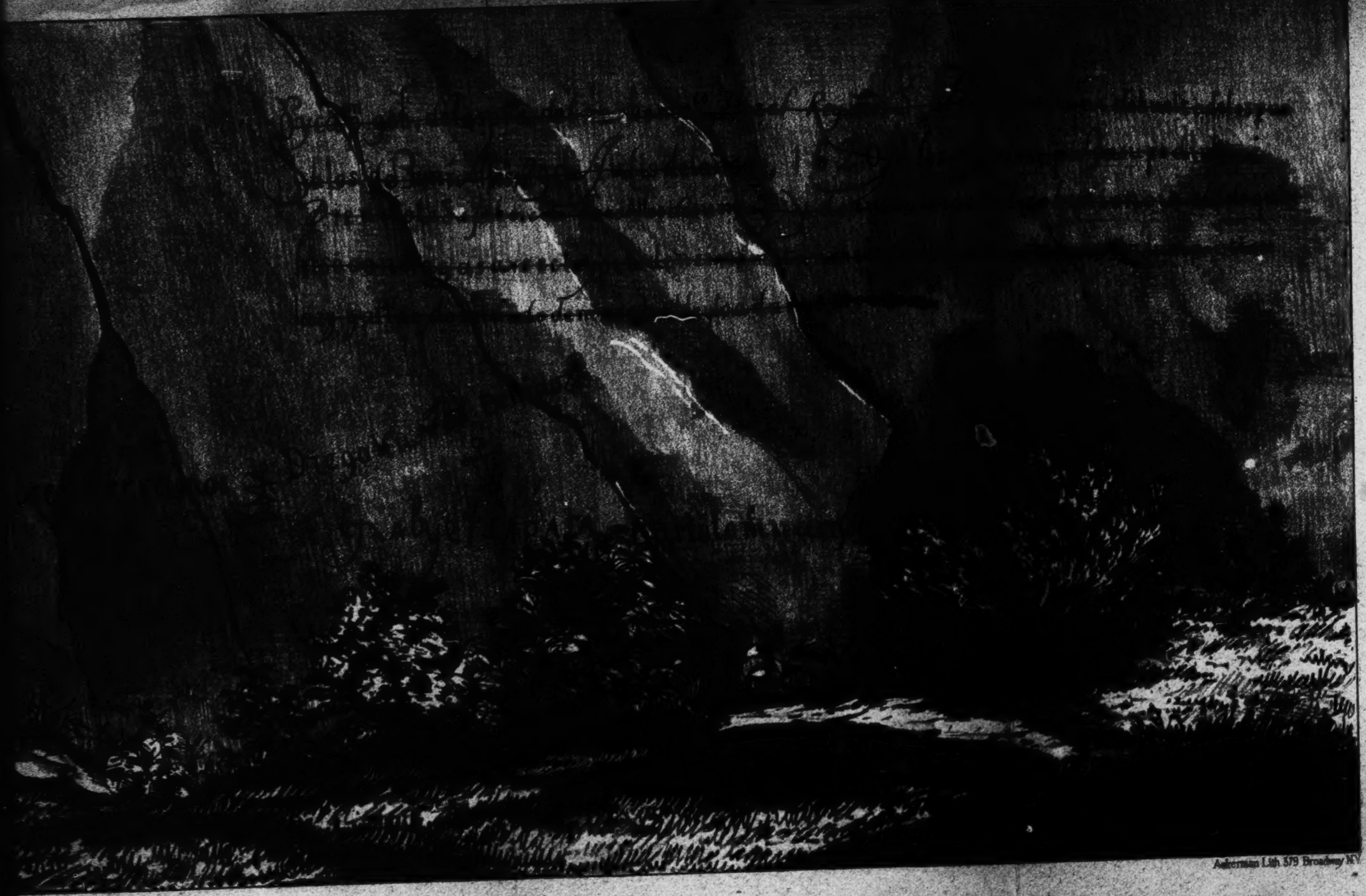


Nº 5

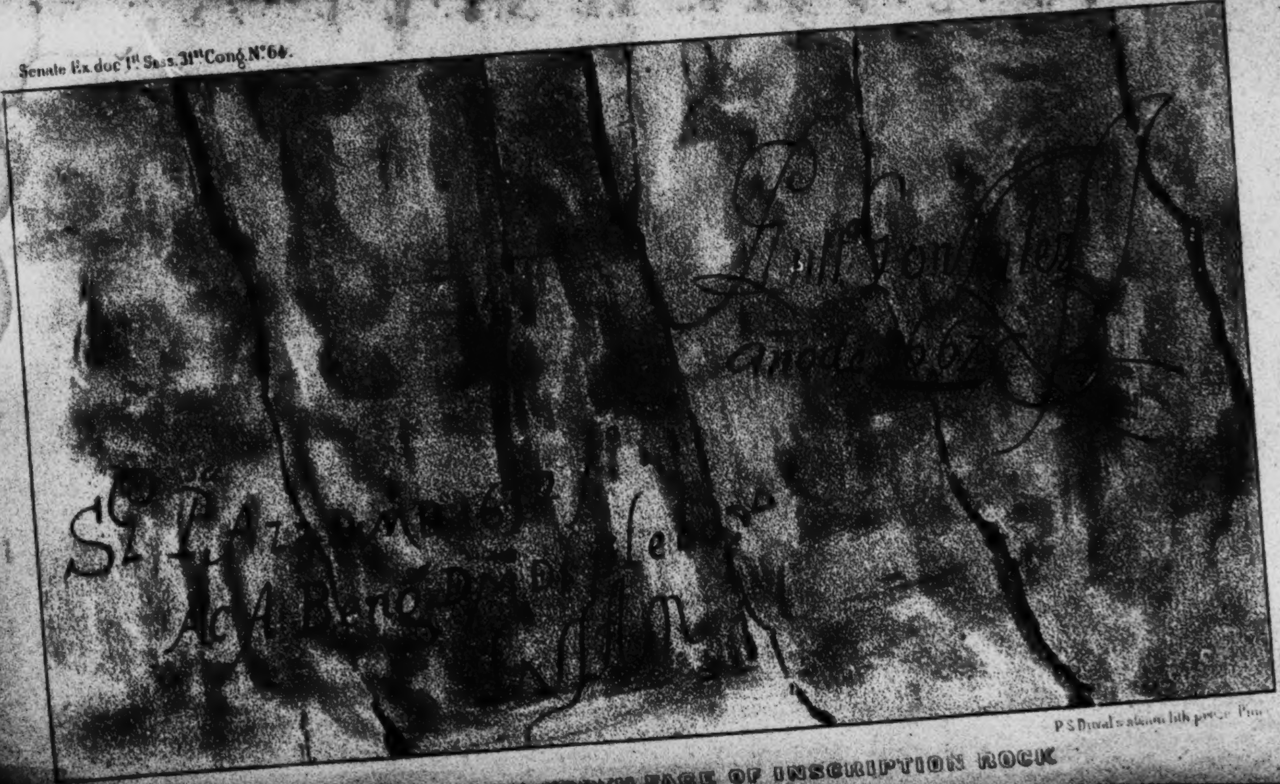
INSCRIPTIONS ON NORTH WALL OF INSCRIPTION ROCK

Scale of Feet

No 67



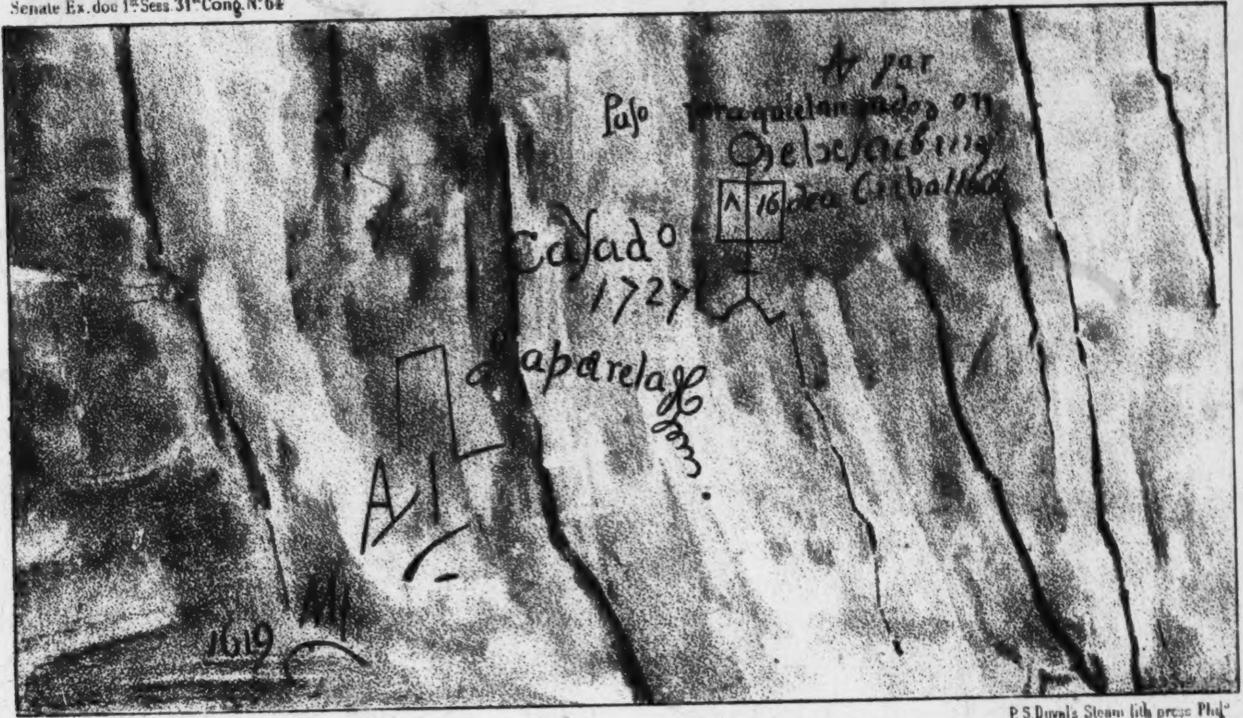
Ackermann Lith 379 Broadway NY


Juan Gonzales
año de 1667
St
A. A. Berg

P. S. Duval's steam lith. press Phila.

[illegible] FACE OF INSCRIPTION ROCK

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS.


Puso
A 16
Cafado
1727
1619

R. H. Kern del.

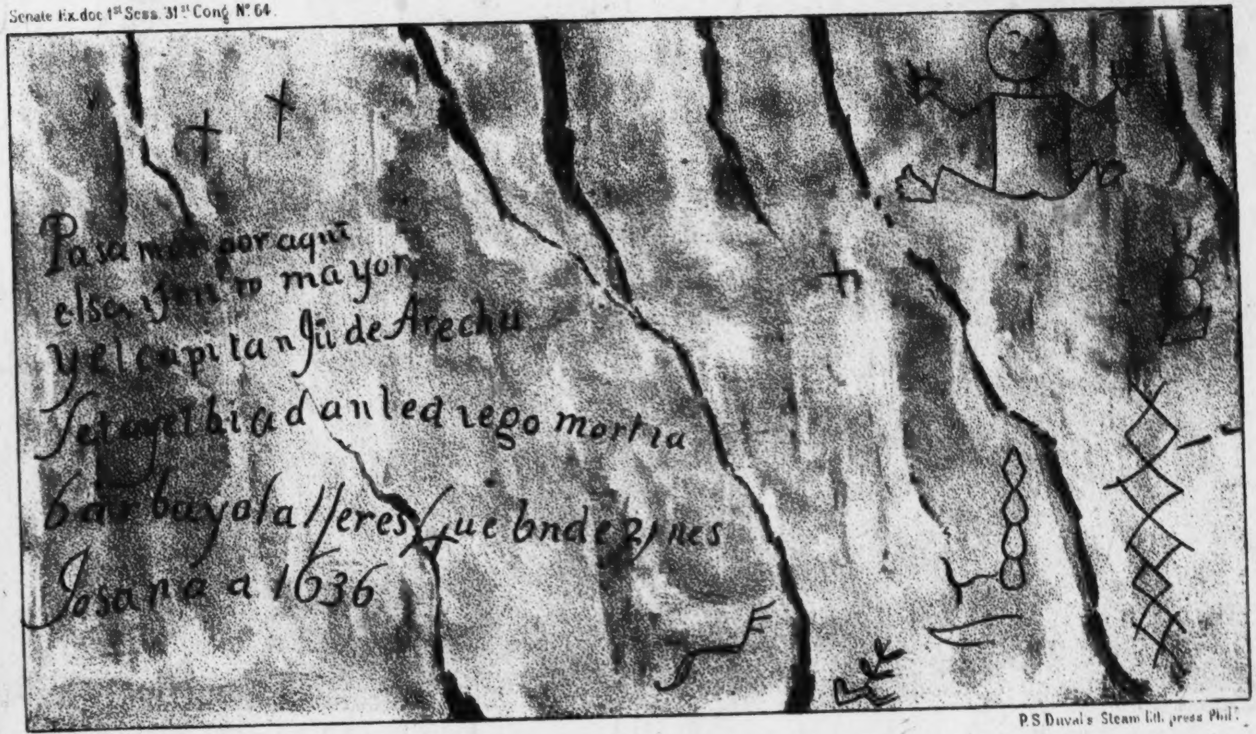
P. S. Duval's Steam lith press Phila.

INSCRIPTIONS ON SOUTH FACE OF INSCRIPTION ROCK

Sept. 17.

LIBRARY
UNIVERSITY OF ILLINOIS

Pl. 70.

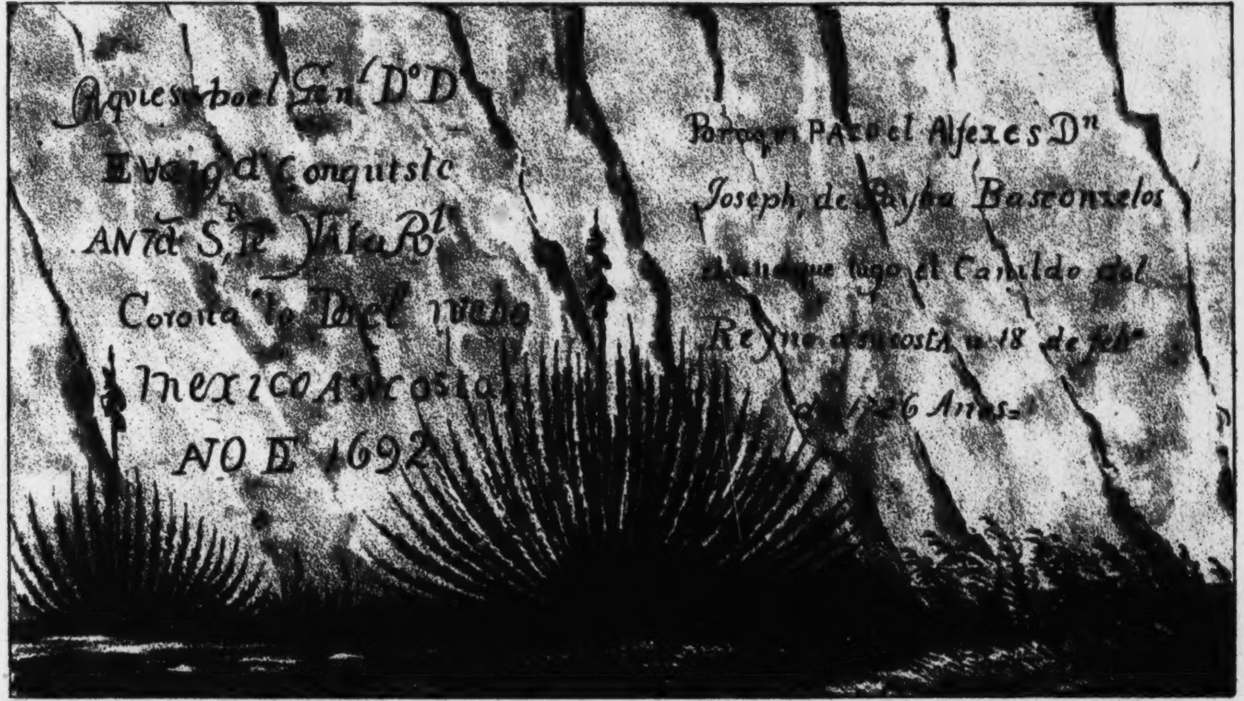

Pasamos por aqui
el sargento mayor
y el capitan Jū de Arechu
Setaqelbiadanledrego mortia
bar buyolalleres que bnde 2 nes
Josana a 1636

R. H. Kern del.

P. S. Duval's Steam lith. press Phil.

INSCRIPTIONS ON SOUTH FACE OF INSCRIPTION ROCK.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS.


Aquiestuboel Genl Do D
Evago de Conquitsto
ANTA Sta Ve Yala Rl
Corona te Duel nuebo
Mexico Asucosta
ANO E 1692
Porqui PAso el Alfexes Dn
Joseph de Payba Basconzelos
el año que tuyo el Cabildo del
Reyno Asucosta a 18 de feb
de 1726 Anos

Drawn by R.H.Kern from Copies made by Lt Simpson U.S.A.

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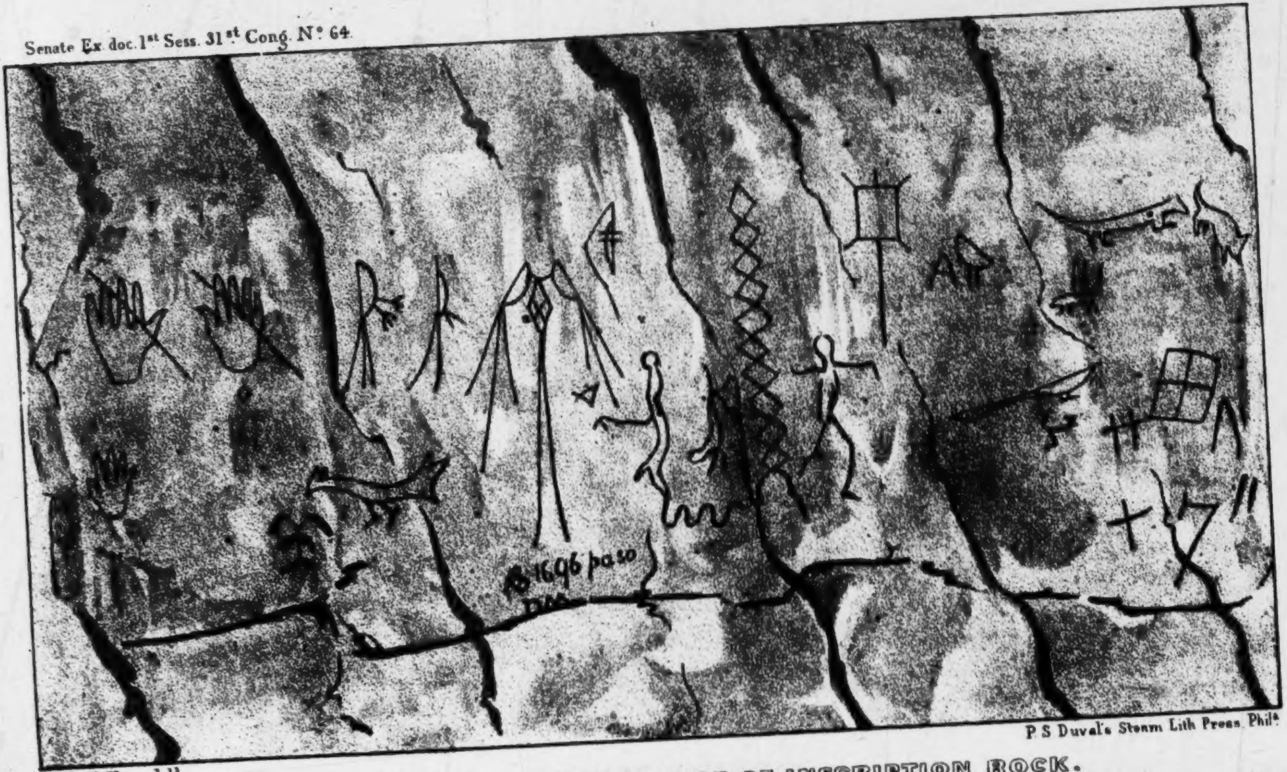

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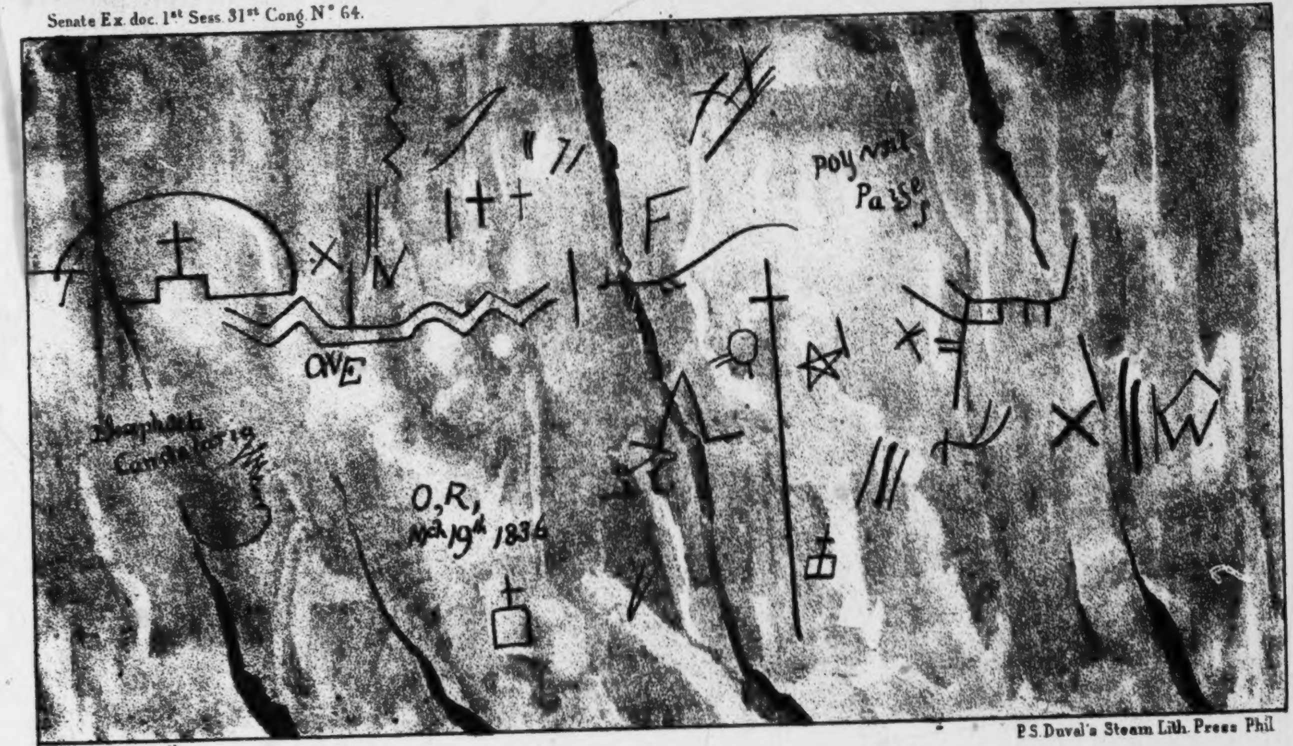
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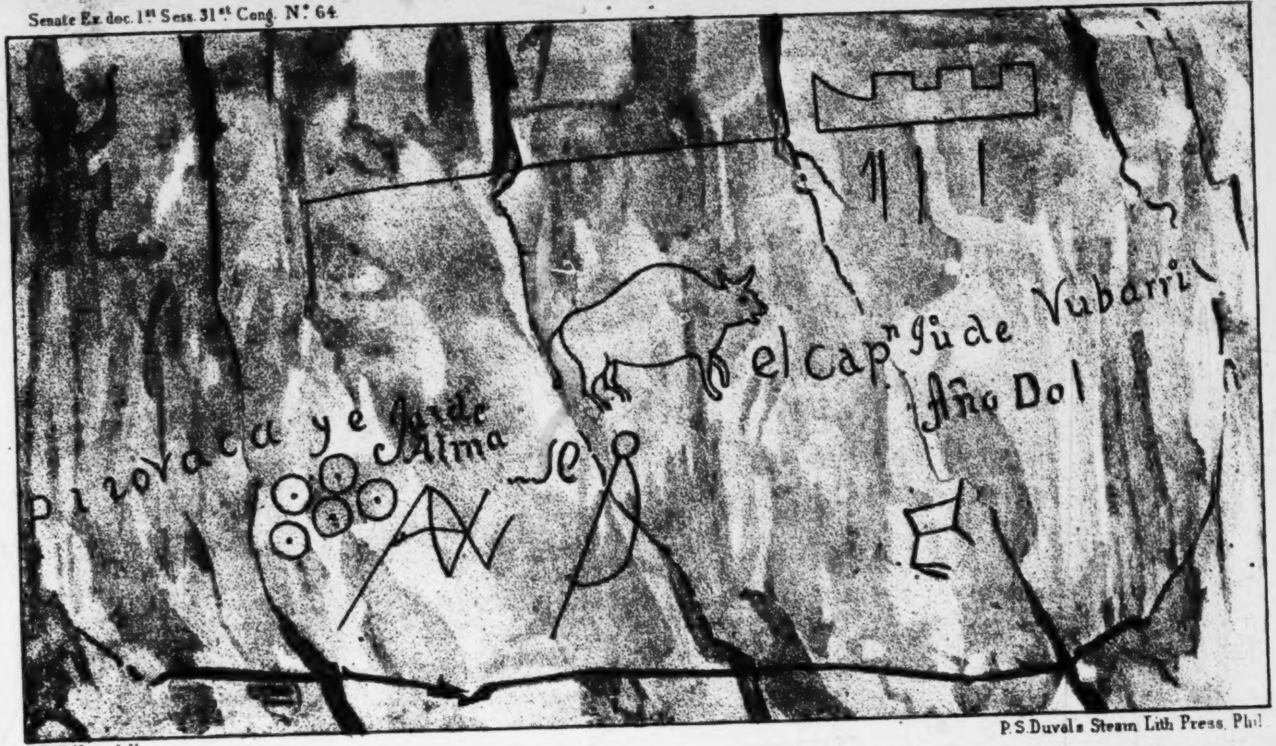
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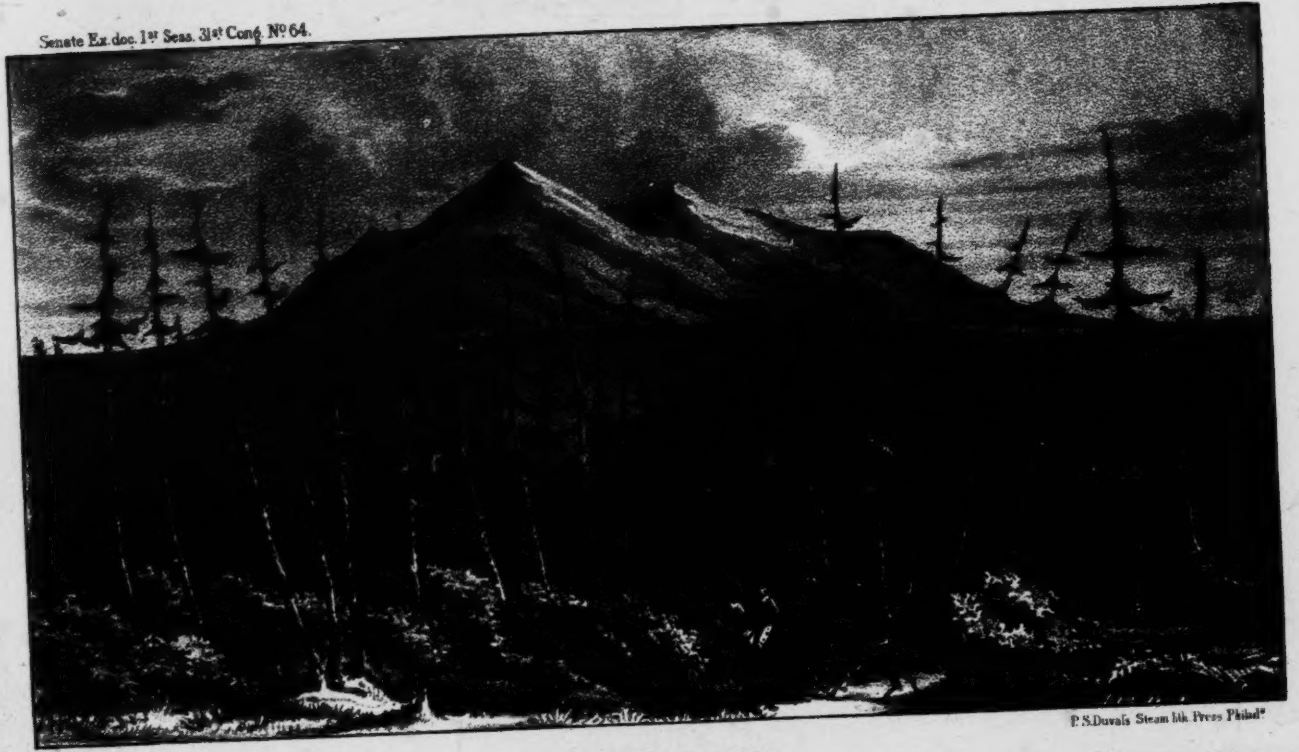

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